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HP SureStore Network Attached Storage

HP SureStore HD Server 4000

User's Guide

User's Guide

HP SureStore HD Server 4000

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Applicable Products:
J3290A, J3291A, J3292A

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The Product. Your product warranty and warranty service information is in appendix B in this guide.

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Product Support

HP's Electronic Support Center:

`http://www.hp.com/support/hdserver`

See also appendix A, "Getting Support".

Safety Considerations

Prior to the installation and use of this product, review all safety markings and instructions.

⚠	Instruction Manual Symbol. If the product is marked with this symbol, refer to product manuals to protect the product from damage.
WARNING	Denotes a hazard that can cause injury.
CAUTION	Denotes a hazard that can damage equipment or data.

Do not proceed beyond a **WARNING** or **CAUTION** notice until you have understood the hazard and have taken appropriate precautions.

Grounding. This product provides a protective earthing terminal. There must be an uninterruptible safety earth ground from the main power source to the product's input wiring terminals, power cords, or supplied power cord set. Whenever it is likely that the protection has been impaired, disconnect the power cords until the ground has been restored.

If your LAN covers an area served by more than one power distribution system, be sure their safety grounds are securely interconnected.

LAN cables may occasionally be subject to hazardous transient voltages (such as lightning or disturbances in the electrical utilities power grid). Handle exposed metal components of the network with caution.

For more safety information, see the "Safety Statements" section starting on page D-4.

Servicing. There are no user-serviceable parts inside the user-replaceable modules comprising the product. Any servicing, adjustment, maintenance, or repair must be performed only by service-trained personnel.

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About This Guide

This *User's Guide* aids in installation and use of the HP SureStore HD Server 4000. How to use the chapters is described below.

You can read about network attached storage and the features of this file server in chapter 1.

1. Product Overview is an introduction to the product.

The first time you install the server, you can use the large sheet titled *Quick Setup* to aid in the initial installation of your server. Using that sheet as your primary aid, you can follow its steps and follow its references to this *User's Guide* for optional hardware additions and for customizing the configuration once the server is started up.

Or you can use chapter 2 of this manual for installing the server.

2. Installation is a detailed guide to initial installation and setup, including basic configuration, and to setting up and maintaining the hardware. It contains references to other chapters for options. For example, after completing chapter 2, you may need to further customize your configuration using chapter 4 (see below).

Once the server has been started up and you wish to change or check the configuration, use chapters 3 and 4.

3. Configuration Using the Control Panel describes the configuration and operational tasks done at the control panel in front of the server.

4. Configuration Using a Browser: HD Server Admin describes the configuration and management tasks that use the embedded web tool HD Server Admin at any station on the network.

After completing all the installation and configuration steps, the server is ready to serve users on the network, just like any other file server. For instructions to map a drive to the server for a client station, use chapter 5.

5. Setting Up Client Access describes how a network client can find and connect to the server.

When the server has been fully installed and you need instructions on various methods to restart it, use chapter 6.

> **6. Shutting down and Restarting** describes the procedures for shutting down the server, restarting it, and power cycling, along with the needs for those procedures. The operating states of the server are described.

The previous chapters aid in setting up the server. The remaining chapters aid in tasks that you may or may not need to perform.

When you need to add a hard disk module or an optional tape drive, use chapter 7 or 8.

> **7. Adding Hard Disk Drives** describes the selection, installation, and setup of additional disk drive modules.
>
> **8. Adding a Tape Drive** describes selection and installation of an optional tape drive. You can add an internal tape drive or attach an external tape drive.

Once a tape drive is installed or attached to the server, use chapter 9 to aid in ongoing backup and restore tasks.

> **9. Backing Up and Restoring Files** describes the tasks of backing up your server and of restoring files to the server.

To update the firmware running on your server, use chapter 10.

> **10. Updating the Firmware** describes checking the current firmware version and checking for other versions available. It describes downloading a new version and updating the server to use new firmware.

If you encounter problems with your server, use chapter 11.

> **11. Resolving Problems with Your Server** describes the indicators and symptoms you could encounter, describes how to isolate causes, and describes how to resolve the problem or repair the faulty component.

The appendices provide supplemental reference information—technical and regulatory specifications, and support and warranty services.

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Product Overview

What is Network Attached Storage?

Network-attached storage (NAS) is one of the latest innovations in the computer information storage world. It provides a simpler, more reliable, and more cost-effective way to add shared storage to your network. NAS requires very little setup and is easy to maintain. This is achieved by using a streamlined technology called a thin server, which also allows the NAS devices to be completely independent of the general-purpose file server.

HP SureStore HD Server 4000

HP J3290A
HP J3291A
HP J3292A

The HP SureStore HD Server 4000 family of products are NAS devices that attach directly to your network and provide dedicated personal and shared file storage for workgroups and departments. The products contain SCSI hard disks in a preconfigured RAID 5 array network file-sharing compatibility, and an easy-to-use embedded web administration interface. They also provide the added convenience of local internal or external tape backup, along with e-mail and SNMP notification of critical events.

Benefits

- Fast and easy to set up
- Easy to administer and manage
- Data redundancy and security
- No software to load
- No disruption to existing server operation

Possible Uses

- Personal directories
- Shared group directories
- File-based databases
- Departmental or workgroup file server
- Remote site file server
- Temporary storage

Features

Disks and File System

- Three to six SCSI hard disk drive modules
- Expandable RAID 5 file system, already generated
- Hot spare capability

Networking

- 10Base-T (Ethernet) or 100Base-TX (Fast Ethernet)
- TCP/IP

Windows Networking

- SMB
- WINS support
- Supported clients: Microsoft® Windows® 95, 98, and Windows NT® 4
- NT domain pass-through authentication

Administration and Management

- Embedded web administration interface and web-based installation wizard
- Control panel LCD for basic configuration, with password protection
- DHCP/BOOTP and manual configuration of network parameters
- E-mail (SMTP) and SNMP alert notification

Backup

- Optional internal and external tape drive
- Scheduled backups
- Backup of shared directories over the network

System

- Redundant power supplies and power cords
- Internal tape drive option
- Pedestal or rack mount with optional rack-mount kit
- Automatic server restart
- Firmware stored in Flash memory with firmware upgrades over the network
- Lockable enclosure and disk drives
- Other network management tools such as HP OpenView, HP TopTools, and other managers, through SNMP *sets* and *gets*.

2

Installation

The first time the HP SureStore HD Server 4000 is started, it automatically prompts and waits for the IP address setting at the control panel. Then when you access the embedded web interface using a web browser, the server runs an installation wizard. This chapter is a guide to the entire installation process. It details the installation steps and directs you to additional chapters if needed for your particular installation.

A *Quick Setup* guide for the first installation of this product is also included along with this *User's Guide*. It portrays the entire installation process, from making the connections to setting up the server. To add disk drive or tape drive modules and do further customization for your particular network environment, you can follow references in the *Quick Setup* guide to those optional tasks in this *User's Guide*.

If this is not the first time the server has been started (that is, it has been started before and is not being reset to defaults), then use chapter 6, "Shutting Down and Restarting", instead of this chapter.

Installation Summary Checklist

- ❏ Unpack components. (page 2-3)
- ❏ *Optional:* Add any disk drive and tape drive modules. (page 2-5)
- ❏ *Optional:* Rack mount. (page 2-5)
- ❏ Use preparation checklist. (page 2-6)
- ❏ Attach network cable and power cords. (page 2-8)
- ❏ Switch on power. (page 2-8)
- ❏ At control panel, check lights and display. (page 2-8)
- ❏ Set the IP address, using either DHCP, BOOTP, or manual entry at the control panel. (page 2-9)
- ❏ *Optional:* Additional parameters available on the control panel:
  - ❏ Set a password for the control panel. (page 2-11)
  - ❏ Set the server to automatically restart if possible when critical errors are encountered. (page 2-11)
- ❏ Exit control panel setup and verify initialization. (page 2-11)
- ❏ *Optional:* Use a web browser on a PC on the network to run the embedded web installation wizard, to set up additional features: (page 2-13)
  - ❏ Administrator password
  - ❏ Server name
  - ❏ Date and time
  - ❏ DNS
  - ❏ WINS
- ❏ *Optional:* Use a web browser on PC or station on the network to run the embedded HD Server Admin, for additional configuration of the following: (chapter 4)
  - ❏ User-level security, users and groups and permissions. Optionally pass through authentication to an NT domain controller. (page 4-10, page 4-11)
  - ❏ Passwords for share-level security. (page 4-10)
  - ❏ Additional shares. (page 4-10)
  - ❏ Additional disk drives. (chapter 7)
  - ❏ Backup schedule. (chapter 9)
  - ❏ Other automated services. (page 4-12)
  - ❏ Restart the server if your changes require it. (page 4-13)
- ❏ Set up access to the HD Server on client PCs and workstations. (chapter 5)

Unpacking Components

Unpack and inspect all parts for damage. Contact your dealer if anything is missing. Retain the packaging until the product is installed.

- Server. A SCSI terminator is preinstalled on the rear panel (HP part no. 5063-5324).
- *User's Guide,* this manual (HP part no. 5967-9979)
- *Quick Setup* sheet (HP part no. 5967-9985)
- 2 enclosure keys (HP replacement part no. 5182-4534)
- Two power cords, both with the part number listed below for your country:

Region or Country	Part Number
USA, Canada, Brazil, Mexico	8120-6805
Argentina	8120-6871
Chile	8120-6979
Europe (except as listed below)	8120-6802
Switzerland	8120-6807
United Kingdom	8120-8709
South Africa, India	8120-6808
Australia, New Zealand	8120-6803
China	8120-8376

WARNING! ❑ If your installation requires different power cords than these supplied with the server, be sure to use power cords displaying the mark of the safety agency that defines the regulations for power cords in your country. The mark is your assurance that the power cords can be used safely with the server.

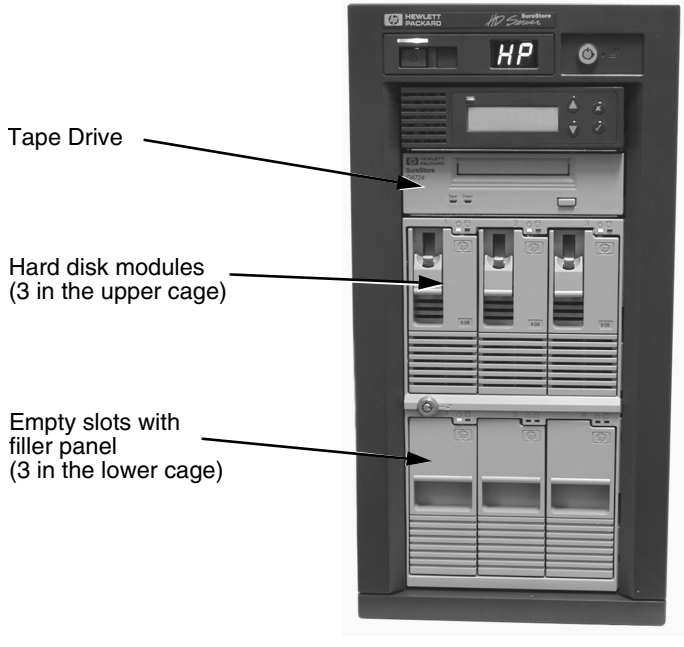
The HP SureStore HD Server 4000 Models

HP J3290A Contains three replaceable 9.1-gigabyte HP SCSI hard disk drive modules, preconfigured as a RAID 5 volume, and three empty slots for adding additional replaceable HP hard disk drive modules.

HP J3291A Contains three replaceable 9.1-gigabyte HP SCSI hard disk drive modules, preconfigured as a RAID 5 volume, three empty slots for adding additional replaceable HP hard disk drive modules, and an HP DAT40 internal DDS-4 tape drive for local backups.

HP J3292A Contains six replaceable 9.1-gigabyte HP SCSI hard disk drive modules, five preconfigured as a RAID 5 volume, one as a hot spare.

HP J3291A SureStore HD Server 4000



Optional: Adding Modules

Use this section if you intend to add components to the HP SureStore HD Server 4000 before you install it.

Installing Hard Drive Modules

The product numbers HP J3290A and J3291A have empty slots accommodating up to three additional HP hard disk drive modules. These drives can be used to expand the volume. (One of the additional modules can be reserved as a hot spare.) Refer to chapter 7 for a list of drive products available and the instructions for installation; then return to this page to complete the server installation.

Installing Internal Tape Drive Module

You may add an internal tape drive to any of the three product numbers. (HP J3291A has a DAT40 drive already installed.) Refer to chapter 8 for a list of tape drive products available and the instructions for installation; then return to this page to complete the server installation.

Attaching External Tape Drive

You may attach one external HP DAT or HP DLT drive to any HD Server 4000. You may install both an external *and* an internal tape drive. Refer to chapter 8 for a list of the tape products available and the instructions for attachment; then return to this page to complete the server installation.

Note

- ❑ The external tape drive attaches to the HD Server in place of the preinstalled SCSI terminator. Ensure that a SCSI terminator is attached to the end of the SCSI bus, usually on the external tape drive. The terminator you remove from the HD Server's SCSI connector (HP part no. 5063-5324) may be moved to the tape drive. Otherwise, you may use the SCSI terminator block attached to the rear of the tape drive.

Optional: Rack Mounting

After you have installed any additional modules (as described in the previous section), you can use the HP J1492B Rackmount Kit for HP Storage System/6 to mount the server in any HP 19-inch rack. Perform the rack mounting before attaching power or cables to the HD Server.

Preparation Checklist

10T_____ 100T_____
Autonegotiate?_____

❑ Verify that a 10Base-T (Ethernet) or 100Base-TX (Fast Ethernet) network cable with an RJ-45 connector is ready for the server.

❑ Determine how the IP addresses are assigned on the network for the server. The HD Server provides the following choices.

DHCP/BOOTP server__

- The server can use DHCP (Dynamic Host Configuration Protocol) or BOOTP (Bootstrap Protocol) for automatic assignment. For BOOTP service, configure the address for the HD Server on your BOOTP server before proceeding. For DHCP service, you may wish to assign a static address to the HD Server, or you can allow dynamic IP assignment. Consult your documentation for the service you select.

IP addr_____
Mask_____
Gateway_____

- Otherwise, the server must use manual IP address assignment. In this case, determine the IP address, the subnet mask, and the default gateway (router), if any.

2 power sources_____

❑ Locate two power sources for plugging in both redundant power supplies on the server.

Power is off____

❑ Verify that the main power light above the power switch is ***off*** (illustrated on page 2-7). If it is ***on***, disconnect power.

CAUTION!

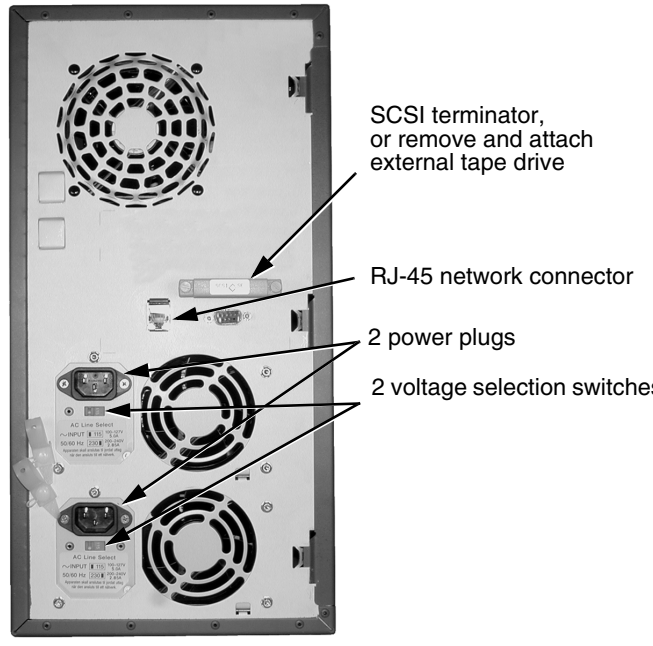
Input Voltage____
100-127__ 200-240__
2 power cords____

❑ Verify that the power supply input voltage is set according to the power standards in the country of use; set the two voltage switches on the rear of the enclosure (see the rear view on page 2-7) to 115 volts or 230 volts. Also verify that the power cords are appropriate for the country of use (see page 2-3 for a list).

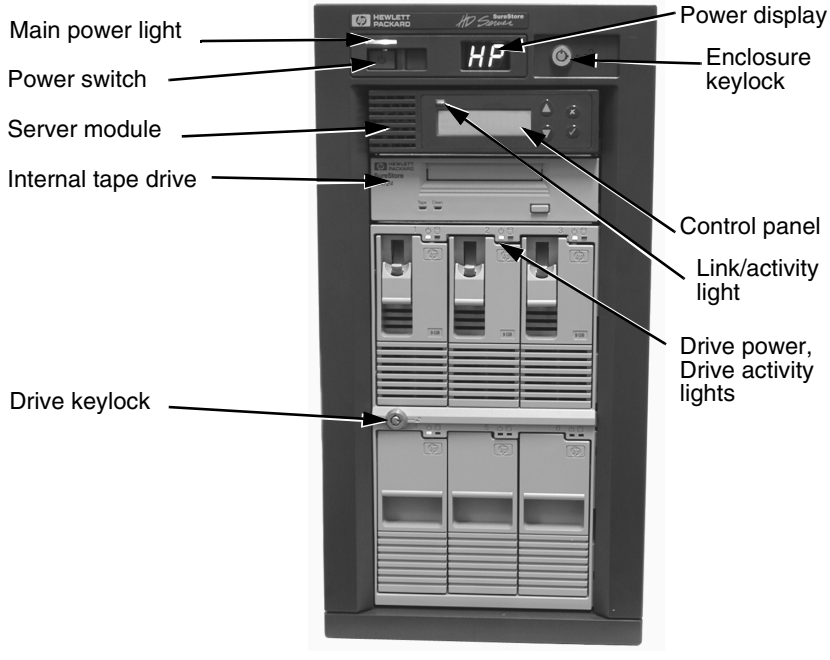
Options installed____

❑ Install any optional hardware: additional disk drives, tape drives, rack mounting. See “Adding Modules” on page 2-5.

Rear View of HD Server



Front View of HD Server



Connecting and Starting Up

Startup Steps

1. While the power is ***off***, attach your network cable to the RJ-45 connector on the rear of the server. (See the rear view illustrated on page 2-7.)

Note ❑ If you have attached an external tape drive, now install its power cord and switch on its power.

2. Attach the two power cords to the rear of the server and to power outlets (preferably to separate power circuits). (See the rear view illustrated on page 2-7.)
3. On the front of the server, switch on power. (See the front view illustrated on page 2-7.)
4. Verify that:
   - The main power light (LED) above the power switch is ***on*** and the power display (2-character LED) displays HP.
   - Drive power and drive activity lights (LEDs) blink to indicate self-tests. The drive power light on each disk drive module stays ***green***.
   - The control panel (LCD) displays self-testing and loading messages.

   If you see any of the following exceptions to the verification checks listed above, refer to chapter 11, "Resolving Problems with Your Server":

   - Lights described above fail to go on.
   - Power display shows LF or PF or FF.
   - Control panel displays FAIL or FAULT anywhere in the text.
   - Control panel display remains unchanged for more than ten seconds.

Note ❑ When you start up the server, its behavior depends on whether you are installing it for the first time or have already installed it before. The first time, it will behave as described in step 5 below; proceed with this procedure. If the behavior is different, it has probably been started before; go to "Starting Up the Server" on page 6-1 instead.

Control Panel Setup

5. You will be prompted on the control panel for the IP configuration method as follows. (The two displays alternate.)

Press ✔ to use DHCP/BOOTP or...
Press ✘ to set IP manually

Startup cannot continue until an IP address is set. Press one of the following keys on the control panel to select the method of assigning IP addresses on your network:

Assign IP Address Automatically

- Press ✔ if the server IP address will be assigned on your network using either DHCP (Dynamic Host Configuration Protocol) or BOOTP (Bootstrap Protocol). See "DHCP/BOOTP server" on page 2-6 for more information.

  Startup of the server will continue until the server is active on the network. Skip to step 11 on page 2-12 to verify normal operation.

Assign IP Manually

- Press ✘ if you will assign the server an IP address manually at the control panel. This will place you in the control panel's setup mode.

6. Set the IP address manually at the next prompt:

IP Address =000.000.000.000

The first character position on the second line of the display is flashing. You may edit the digits one by one from left to right. When a digit is flashing, you may:

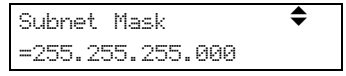
- Increment each digit's value (change it "up") by pressing ▲.
- Decrement each digit's value (change it "down") by pressing ▼.
- Accept the digit by pressing ✔. This moves to the next digit, unless it was the last digit.
- You may go back (left) by pressing ✘ for each digit until the needed digit is flashing. Then press ▲ or ▼ to change it.

  Note that if you press ✘ when the first digit is flashing, you will cancel the setting of the entire parameter.

When the last of the 12 digits is flashing, pressing ✔ again accepts the address setting displayed. The scroll symbol ⬍ returns to the first line of the display.

Subnet Mask

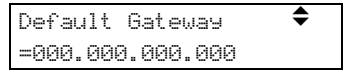
7. Press ▼ to scroll down to the next parameter, the IP subnet mask. The subnet mask determines what traffic should be sent to the gateway and what traffic stays on the local segment. You will see a default based on the class of IP address you set in step 6 above. An example for class C is shown below:



To change this parameter, press ✔ to select it. Then specify the subnet mask in the same format and with the same procedure as described for the IP address in step 6 above.

Default Gateway

8. Press ▼ to scroll to the next parameter, the default gateway (default router) address. All traffic directed outside the local network—according to the subnet mask (step 7 above)—is sent to this default gateway. The default 000.000.000.000 specifies that no default gateway is set.



To change this parameter, press ✔ to select it. Then specify the gateway address in the same format and with the same procedure as described for the IP address in step 6 above.

When the addresses are set up, you have configured the minimum requirements to put the server on the network so that you can make a remote connection and use the embedded web interface to make further configuration changes before providing client access.

Optional: Additional Control Panel Changes: Password, Auto-Restart, Link Speed

9. Refer to the table on page 3-6 for any setup changes you want to make on the control panel. Examples of setup changes are:

   - You may set a password to limit access to the control panel. Set the `Change Password` parameter.
   - You may want the server to automatically attempt to restart following critical errors rather than halt and wait. Set the `Auto Restart` parameter.
   - If you must set a specific link speed or duplex mode, rather than have them set automatically, set the `Link Speed` parameter.

   Scroll to the desired control panel parameter. Use the following buttons (as indicated by the scroll symbol ⇕ in the top line of the display):

   ▼ to scroll "down" to the next parameter in the list
   ▲ to scroll "up" to the previous parameter in the list

   To select the parameter for modification, press ✔ (when the scroll symbol ⇕ is in the first line of the display).

   Use the ▲ and ▼ buttons to scroll through the choices of settings (when the scroll symbol ⇕ or flashing characters are in the second line of the display) or to edit characters in the setting. Press ✔ to accept the setting.

   (A table listing the behavior of all the buttons is in "Control Panel Reference" on page 3-1.)

No Further Control Panel Changes

10. Exit the control panel setup mode to proceed with server initialization. Press ✘ to cancel; The following displays:

    ```
    Exit Setup Mode ?
    ✔ = Yes, ✘ = No
    ```

    Press ✔ to confirm the exit.

    Note: If your IP address, subnet mask, and gateway settings (done in steps 6, 7, and 8 above) are inconsistent when you attempt to exit, the error message shown below displays for three seconds.

    ```
    Gateway, Subnet
    or IP invalid
    ```

    In response, press ✔ or wait for three seconds. Return to one of the three addressing parameters to correct the inconsistency (see page 2-9). If you do exit without correcting the error, the server may be inaccessible on the network.

Verify Normal Operating State

11. Startup of the server will continue until the file system is ready and the server is available on the network for client access or for further configuration. The following are indicators of normal operation. Refer to the front view illustration on page 2-7.

    - The main power light (above the power switch) is ***on***.
    - The drive power lights on operating drives are ***green*** and the drive activity lights flash when data is read or written.
    - The control panel displays the server name on the first line and alternates on the second line between the date and time, whether there are any alerts to read, and the IP address. Examples:

HPHDSERV345ABC Tue Jun 1 14:59
HPHDSERV345ABC no alerts
HPHDSERV345ABC 192.168.001.001

    It is *not* normal for the IP address to be 000.000.000.000. The server is inaccessible over the network in this case.

    The IP address is not shown if a control panel password has been set.

Note the IP Address

Make a note of the IP address displayed; it is needed in subsequent steps.

- The link/activity light above the control panel display is ***green*** when the network link is established. It ***blinks*** for each packet transmitted or received.
- The server is accessible over the network to client users using standard network file system protocols. The server can be administered using the embedded HD Server Admin (with a web browser).

If your server deviates from the above conditions after it has been set up, see chapter 11, “Resolving Problems with Your Server”.

Web Browser Network Setup

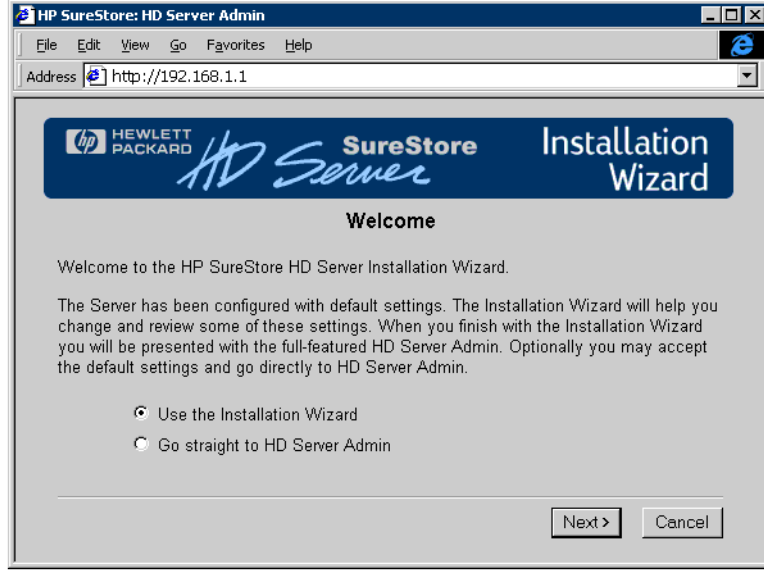
To check and customize the server's network and file system configuration, you may use a web browser at another station on the network. For further requirements and information, see "Using a Web Browser on the Network" on page 4-1.

12. Start the browser. Refer to the server's IP address you noted in step 11, page 2-12. In the browser's address field, you will include the IP address (shown below as *<IP-address>*) in the URL of the server:

    ```
    http://<IP-address>
    ```

    If you configure a DNS name for this server on the DNS server, you can use the name in place of *<IP-address>*.

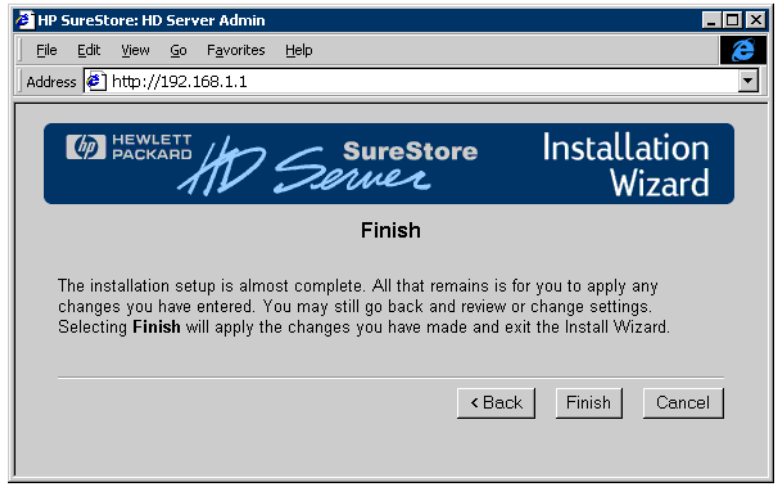
    On the first page of the **Installation Wizard** shown below, you are given the choice to bypass the wizard and go directly to HD Server Admin (go to page 4-3) or to proceed with the installation wizard, which is the quick and easy setup procedure described here.


HP SureStore: HD Server Admin
File Edit View Go Favorites Help
Address http://192.168.1.1
HEWLETT PACKARD
SureStore HD Server
Installation Wizard
Welcome
Welcome to the HP SureStore HD Server Installation Wizard.
The Server has been configured with default settings. The Installation Wizard will help you change and review some of these settings. When you finish with the Installation Wizard you will be presented with the full-featured HD Server Admin. Optionally you may accept the default settings and go directly to HD Server Admin.
Use the Installation Wizard
Go straight to HD Server Admin
Next >
Cancel

13. Allow the **Installation Wizard** to remain selected and click the **Next>** button to proceed. Click **Next>** when finished with each page; you will be guided through the configuration parameters used for most network environments.

    Use the **Help** button for assistance on the pages.

14. When you reach the **Finish** page, click the **Finish** button to apply the setup changes you have made and to exit the wizard.


HP SureStore: HD Server Admin
File Edit View Go Favorites Help
Address http://192.168.1.1
HEWLETT PACKARD
SureStore
Installation Wizard
Finish
The installation setup is almost complete. All that remains is for you to apply any changes you have entered. You may still go back and review or change settings. Selecting Finish will apply the changes you have made and exit the Install Wizard.
< Back
Finish
Cancel

- If the changes you have made in the wizard require restarting the server (as server name and IP changes require, for example), you will see a check in the box for **Restart Server**. Allowing the box to remain checked when you click **Finish** causes the server to be restarted immediately. After your server restarts, your web browser should automatically reconnect to the server. The page displayed will be the HD Server Admin's **Identity** page shown on page 4-3.
- If you did not make changes that require restarting the server, then your web browser immediately displays the HD Server Admin's **Identity** page shown on page 4-3.

15. Your next step depends on whether you need to further modify the configuration and user setup. Meanwhile, the server is available as configured by the wizard.
    - If no more changes are required, you can skip to chapter 5, "Setting Up Client Access".
    - If more configuration changes are required, you can make them now in HD Server Admin. The following reference list may help you decide.

Optional: Further Configuration

Parameter	Page in HD Server Admin	Location in This *User's Guide*
Microsoft Security Model: User-level and **Users** and **Groups** (with subordinate parameters)	**Security→Microsoft Networking**	"Share Level, User Level" on page 4-10
	Configuration→Users & Groups	"Set Up Users and Groups" on page 4-11
Share Name (and subordinate parameters)	**Configuration→File Shares**	"File Shares" on page 4-10
Event Logging Threshold	**Configuration→Alerts→Event Logging Threshold**	"Event Logging" on page 4-12
Email Alerts Enabled	**Configuration→Alerts→Email**	"E-Mail" on page 4-12
SNMP Enabled, GetCommunityName, SetCommunityName	**Configuration→Network→SNMP**	"E-Mail" on page 4-12
SNMP Alerts Enabled, Authentication Alert Enabled, TrapCommunityName, TrapDestination[1-4]	**Configuration→Alerts→SNMP**	
Enable Automatic Server Restart	**Configuration→General→ Automatic Server Restart**	"Automatic Server Restart" on page 4-5
User (Administrator username)	**Security→Web UI**	"Administrator Username and Password" on page 4-5
Backup Schedule	**Backup/Restore→Schedule**	"Specifying and Scheduling a Backup" on page 9-4
Shutdown and Restart	**Configuration→Shutdown/Restart**	"Restart the Server to Effect Changes" on page 4-13

16. Register your HP NAS product now and receive:

    - Technical support updates
    - Special Hewlett-Packard offers
    - Details on new products and technologies

    Go to URL: `http://www.hp.com/go/surestore_nas`

Maintain Hardware Operation

Maintaining Operating Temperature

Keeping the server within the range of normal operating temperature (refer to appendix C) is necessary.

Notes

- ❑ If the server has been exposed to temperature extremes, allow two hours for it to stabilize to room temperature and humidity before switching on the power.
- ❑ Filler panels are preinstalled in your server to cover any unused disk drive module shelves. These panels must be installed on shelves unused for modules for the product, to provide proper cooling for the disk drive modules. If a filler panel is missing, order the following replacement:

  Hot-swap drive module slot cover 5063-8391

WARNING!

- ❑ Do not block the cooling vents. Do not place the server closer than 6 inches to a wall.
- ❑ To avoid the hazard of electrical shock and to ensure cooling functions, the side door must be closed while power is on.

Power and Temperature Status Indicators

If FF is displayed on the power display, the enclosure's cooling has failed. Begin the shutdown procedure (see page 6-5) as quickly as possible.

CAUTION!

- ❑ Continued operation of the server with a failed fan could result in loss of data or damage to the components.

The lights on the disk drive modules indicate the status of the two cages (with three drive shelves each). All the lights in a cage will flash yellow or red to warn you of power faults:

Flashing Yellow: Temperature in this cage possibly exceeds normal range.

Flashing Red: Temperature in this cage definitely exceeds the operating temperature range. Immediately begin the shutdown procedure on page 6-5 and refer to chapter 11, "Resolving Problems with Your Server".

Maintaining Tape Drives

Tape drives must be cleaned regularly with a cleaning cartridge to maintain the integrity of your backup data. If you installed the HP SureStore tape drive, clean them as advised in the "Cleaning" section in the electronic *User's Guide* on the *HP SureStore Tape CD-ROM* that accompanies your HP tape drive. If your HP SureStore DAT drive was preinstalled, use the instructions in this section.

Recommended Cleaning Frequency

Number of DDS Cartridges Used Each Day			
1	2	3	4+
Every 8 weeks	Every 4 weeks	Every 3 weeks	Weekly

CAUTION! ❑ You should also clean the tape heads if the media caution signal (flashing amber **Clean** light) is displayed on the tape drive.

Cleaning Cartridges

CAUTION! ❑ Use only an HP cleaning cartridge to clean the tape heads. Do ***not*** use swabs or other means of cleaning the heads.

The cleaning cartridge uses a special tape to clean the tape heads. A cleaning cartridge can only be used 50 times or as instructed on the cartridge packaging. When the cartridge runs out of tape, discard it and use a new one.

Cleaning Procedure

1. Insert a cleaning cartridge into the tape drive. The drive automatically loads the cartridge and cleans the heads.

   The cartridge ejects at the end of the cleaning cycle, approximately 30 to 60 seconds. If the cartridge ejects in less than 20 seconds, it has probably expired. In this case discard it and repeat this step with a new cartridge.

2. Remove the cleaning cartridge from the tape drive and mark it with the number of times it has now been used.

   Discard it after you have used it 50 times, or as instructed on the packaging.

Configuration Using the Control Panel

This chapter describes how to use the settings and functions of the control panel in setting up your server. Once you have installed and started or restarted the server according to instructions in chapter 2 or 6, you can use these procedures.

Control Panel Reference

Buttons	▲	Up For parameters, previous one in menu. For numbers and letters, next one.
	▼	Down For parameters, next one in menu. For numbers and letters, lower one.
	✘	Cancel, or back up
	✔	OK and continue, or enter
Display Symbols	▲▼	Indicates current line to scroll using ▲ or ▼ button ▲▼ in the first line indicates that ▲ and ▼ buttons will scroll through the menu of parameters in the first line. ✔ selects this parameter to modify settings in the second line. ▲▼ in the second line indicates that ▲ and ▼ buttons will scroll through the menu of settings in the second line.
	=	Indicates current setting
	Flashing Digit	Indicates current digit or setting to change. A flashing digit in the second line indicates that ▲ and ▼ buttons will increment or decrement that digit or setting.

Accessing Control Panel Parameters

The primary modes for using control panel parameters are *view mode*, available from the normal operating state, and *setup mode,* available from the initialization state (see page 6-10). (*Boot mode* has special uses for product code; see page 10-3.)

View Mode

You can use view mode for viewing the current settings, for reading any alerts, for checking the link type, for changing the control panel password, and for shutting down the server. While the server is operating normally, you enter view mode by pressing the ✔ button on the control panel.

You will be prompted for the control panel password—if you have set one. In that case, see "Supplying the Password for Access" on page 3-3, and then return here.

The control panel display then alternates the following instructions for entering view mode:

```
Use ↑ or ↓ key
to move up/down
```

```
Use ✘ to cancel
Use ✔ to select
```

Press any control panel button to proceed in view mode or wait about 30 seconds. The settings are listed in the table on page 3-6. For procedures that use the control panel, refer to the following:

- For shutdown see chapter 6, "Shutting Down and Restarting".
- To check errors and alerts see chapter 11, "Resolving Problems with Your Server".

Setup Mode

Enter setup mode to make changes to the server's settings.

- This happens automatically when installing the server for the first time (see chapter 2) if you choose the manual method of IP address setting. Proceed to page 2-9 for additional setup procedures.
- *After* installing the server for the first time, you can get into setup mode whenever you restart the server. During initialization the control panel displays the following countdown from 10 to 0 seconds for entering setup mode.

  ```
  Press ✔ to enter
  Setup Mode: 10
  ```

  If you do *not* press ✔ before the countdown of 10 seconds is completed, then startup will resume.

If you do press ✔ before the countdown of 10 seconds is completed, you will be prompted for the control panel password—if you have set one. In that case, see "Supplying the Password for Access" on page 3-3, and then return here.

The control panel display then alternates the following instructions for setup mode:

Use ↑ or ↓ key to move up/down
Use ✘ to cancel Use ✔ to select

Press any control panel button or wait (about 30 seconds) to proceed with setup mode.

The settings are listed in the table on page 3-6. For procedures that use the control panel, refer to the following:

- For shutdown see chapter 6, "Shutting Down and Restarting".
- To check errors and alerts see chapter 11, "Resolving Problems with Your Server".

Supplying the Password for Access

You will be prompted as shown below for the control panel password—if you have set one. (See `Change Password` in the table on page 3-6.)

```
Enter Password:
```

The first character position on the second line of the display is flashing. To specify each character you may:

- Press ▲ (up button) on the control panel to cycle through each letter of the alphabet and each digit.
- Press ▼ (down button) on the control panel to cycle through each letter and digit in the opposite sequence.
- Accept the character by pressing ✔. The next character position flashes. Specify that character in the same way.

You may go back (left) by pressing ✘ for each character until the needed character is flashing. Then press ▲ or ▼ to change it.

When the password is complete, press ✔ at a blank character position.

Setup Parameters and Procedures

Setting Password, Auto-Restart, Link Speed

Refer to the table on page 3-6 for the setup changes you want to make on the control panel. Examples of setup changes are:

- You may set a password to limit access to the control panel. Set the `Change Password` parameter.
- You may want the server to automatically attempt to restart following critical errors rather than halt and wait. Set the `Auto Restart` parameter.
- If you must fix a specific link speed or duplex mode, rather than have them set automatically, set the `Link Speed` parameter.

  Scroll to the control panel parameter (the sequence is shown in the table). As the scroll symbol ⇕ in the top line of the display indicates, use the following buttons:

  ▼ to scroll “down” to the next parameter in the list
  ▲ to scroll “up” to the previous parameter in the list

  To select the parameter for setting, press ✔ (when the scroll symbol ⇕ is in the first line of the display).

  Use the ▲ and ▼ buttons to scroll through the choices of settings (when the scroll symbol ⇕ or flashing characters are in the second line of the display) or to edit characters in the setting. Press ✔ to accept the setting.

  Refer to “Control Panel Reference” on page 3-1 for button behavior.

Exiting the Control Panel

To finish using the control panel view mode or setup mode, press ✘ to cancel. You will see one of the following displays:

Exit Setup Mode ? ✔ = Yes, ✘ = No	Exit View Mode ? ✔ = Yes, ✘ = No

Press ✔ to confirm the exit.

Notes for Setup

- If your IP address, subnet mask, and gateway settings are inconsistent when you attempt to exit from setup mode, the error message shown below displays for three seconds.

  ```
  Gateway, Subnet
  or IP invalid
  ```

  In response, press ✔ or wait three seconds. Return to the three addressing parameters to correct the inconsistency. If you do exit without correcting the error, the server may be inaccessible on the network.

- When you exit setup mode, your changes are saved and take effect.

- Startup of the server will continue until the file system is ready and the server is ready for client access. Verify that you see the normal operating display on the front of the server, as described in “Normal Operating State” on page 6-4.

Reference Table: Control Panel Parameters, Menus, and Settings

Parameter	In Setup Mode	In View Mode	Description
IP Method *	Settings menu: Manual DHCP/BOOTP	Show setting only	Selects the mechanism for determining the IP address, subnet mask, and default gateway.
IP Address * ‡	Edit the default: 000.000.000.000	Show setting only	The Internet address of the server. The default setting 000.000.000.000 is an illegal IP address.
Subnet Mask * ‡	Edit the default: 255.255.255.000 (for example)	Show setting only	Determines when the traffic is directed through a gateway. The default you see depends on the class of IP address that is set (example is class C).
Default Gateway * ‡	Edit the default: 000.000.000.000	Show setting only	Address of the default router or gateway, through which all traffic directed outside the local network (according to the subnet mask) is directed. The default is that no default gateway is set.
Link Speed *	Settings menu: Auto (default) 10 Half 10 Full 100 Half 100 Full	Show detected speed followed by current setting: ... (Auto) ... (10H) ... (10F) ... (100H) ... (100F) No link	You can view the actual speed & duplex mode detected, followed by current setting in parentheses, e.g. 100 Half (Auto). Meaning of settings: Autodetect and set network speed & duplex mode. (10H)Fix speed to 10Base-T, half duplex. (10F)Fix speed to 10Base-T, full duplex. (100H)Fix speed to 100Base-T, half duplex. (100F)Fix speed to 100Base-T, full duplex. The setting is not in effect: network not connected!
Auto Restart * ‡	Settings menu: On Off (default)	Show setting only	Specifies whether the server will automatically restart (up to 3 times) after a critical error, or whether it will halt.
Alerts Viewer	Not available in setup mode	Show list only no Alerts (default)	Displays a list of scrolling alert messages. Alerts can be cleared by pressing ✔.
MAC address	Show setting only (set at factory)	Show setting only	Displays the hardware (LAN) address of the server.
Firmware Ver.	Show setting only	Show setting only	Displays the running firmware version
ROM Version	Show setting only	Show setting only	Displays the firmware version of the boot ROM code.
Reset Defaults	Prompt: Press ✔ to begin	Not available in view mode	Sets some parameters on control panel (*) and in HD Server Admin to defaults for first installation.
Change Password	Prompt: Press ✔ to begin	Prompt: Press ✔ to begin	Allows you to specify a control password to control access to these menus.

* marks parameters affected by Reset Defaults
‡ marks parameters also set using HD Server Admin, the embedded administration tool

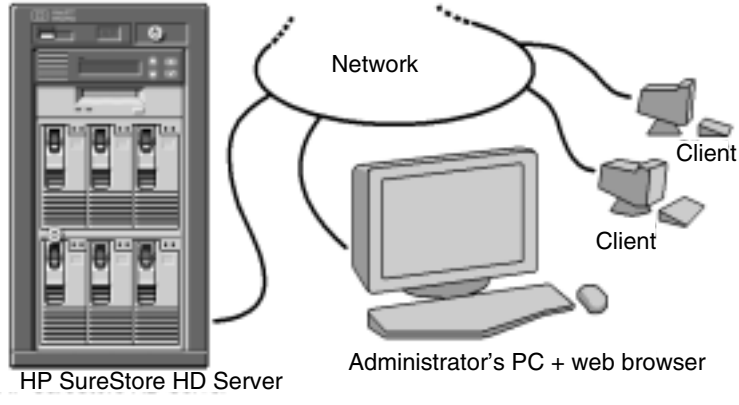
Parameter	In Setup Mode	In View Mode	Description
Shutdown Server ‡	Prompt: Press ✔ to begin	Prompt: Press ✔ to begin	Shuts down file services. This allows you to safely switch off power or insert drives.
Exit Setup/View Mode	Prompt: Press ✔ to begin	Prompt: Press ✔ to begin	In setup mode, allows server initialization to complete first, then go to normal operational display. In view mode, returns to normal operational display.

* marks parameters affected by Reset Defaults
‡ marks parameters also set using HD Server Admin, the embedded administration tool

Configuration Using a Browser: HD Server Admin

Using a Web Browser on the Network

The configuration and management tool embedded in the HD Server 4000 is HD Server Admin. You access it using a web browser at another computer on the network, once you have configured the IP address of the server (step 5 on page 2-9).



You can use Microsoft Internet Explorer version 4.0 or later or Netscape Navigator version 4.06 or later. It is recommended, but not required, that you enable active scripting or JavaScript to take advantage of all the display features of the interface.

1. Start the browser.
2. Refer to the server's IP address you see displayed on the control panel or that you noted during installation. In the browser's address field, you will include the IP address (shown below as *<IP-address>*) in the URL of the server:

   ```
   http://<IP-address>
   ```

   If you have configured a DNS name for this server on the DNS server, you can use the DNS name in place of *<IP-address>*.

3. The HD Server Admin page for that server is displayed. If the server is being installed for the first time, you will see the **Installation Wizard** page.

   If you are starting the server *after* the first time, you will see the **Identity** page shown under "Setup with HD Server Admin" on page 4-3.

Note ❑ If the server is not found, check the following:

- An IP "ping" command done on a remote station can reach the IP address assigned to the server.
- The IP address used in the URL in step 2 on page 4-1 is the same one configured onto the server, except with the leading zeroes omitted. Check the control panel.
- The link/activity light above the control panel display (see page 2-7) is lit to show a link established.
- The `Link Speed` parameter on the control panel shows a setting established, *not* "No link".
- The IP address, mask, and gateway assigned to the server are legitimate for the subnet used.

See also chapter 11, "Resolving Problems with Your Server".

Setup with HD Server Admin

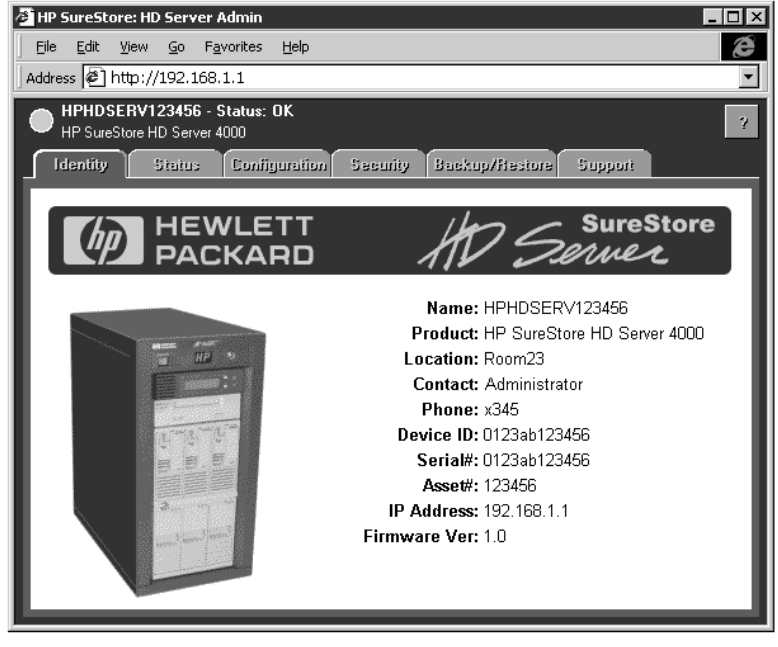
You can change configuration and monitor and administer the server using the HD Server's embedded web tool named HD Server Admin. This chapter focuses on the tasks you can do with the tool. All configuration tasks can be done using this utility, except for the configuration settings found only on the control panel: `Link Speed`, `Password` for the control panel, and `Reset Defaults`.

To access this tool, use the procedure "Using a Web Browser on the Network" on page 4-1.

Initial Page

Identity page

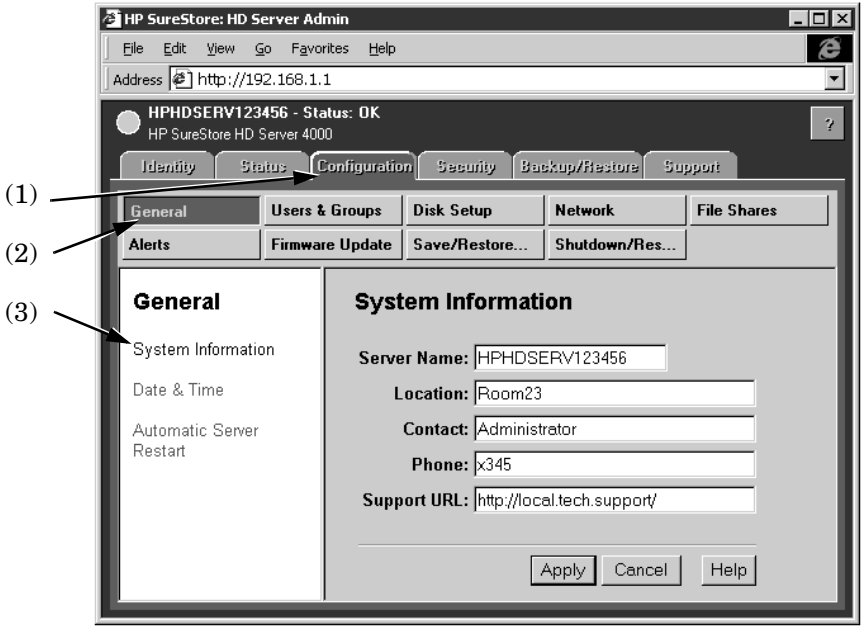
HD Server Admin starts with the display of the **Identity** page, shown below. If the display starts with the **Installation Wizard** instead, go to page 2-13.



Operating Features of HD Server Admin

The web pages served are created with the information current at the time the page is first displayed or is refreshed.

The server name and status are shown at the top of the page. Beneath those items, parameters are available after selecting (1) among the tabs across the top of the page. Under some tabs you then select (2) among buttons in a row under the tabs. After selecting some buttons, you select (3) among items menued in a column at the left side of the page. The new page presents the parameters. In this manual, the series of selections required to reach the parameters is shown as "**Configuration → General → System Information**", for example.



Where available, you may use the **Help** button to access help for the parameters on the page.

Use the **Apply** button to save changes to the server; the page will not be replaced nor the window closed, or use the **OK** button (on some invoked windows) to save changes and close the window.

Note: Restart May Be Required

- Some changes require that the server be restarted to take effect. These include the server name, TCP/IP settings, Windows networking settings and security model. If the response to any of your changes states the need for a restart, use **Shutdown and Restart** on the **Configuration → Shutdown/Restart** page when all changes are complete. See "Restart the Server to Effect Changes" on page 4-13.

This section describes configuration tasks that you may need, either before or after making the server available to clients.

Server Name

Configuration → General → System Information page

By default, the server name is "HPHDSERV*hhhhhh*" where "*hhhhhh*" are the last six digits of the server's MAC address (LAN or hardware address). You may change this name for your server, which is used to advertise the system on the network. This setting takes effect after the next restart (see page 4-13).

You can also fill in other contact information on this page so that it will be available to all clients who view the **Identity** page (illustrated on page 4-3) and to some remote management applications or services (see "SNMP" on page 4-12).

Date and Time

Configuration → General → Date & Time page

Accurate time keeping is critical for accurate file backups and version control. Note that the **Time Zone** and **Daylight Savings Time** settings affect the display of **Date** and **Time** settings by offsetting them from GMT.

Automatic Server Restart

Configuration → General → Automatic Server Restart page

By default, if a critical error halts the server, a message is displayed on the control panel instructing you to press ✔ to restart.

You may enable automatic restart so that the server will restart automatically, if possible. An alert will still be sent to notify you of the event. Note that consecutive auto-restarts are limited; when three occur, the server remains halted in any case.

Administrator Username and Password

Security → Web UI page

On the **Web Console Password** page, set a password to secure access to HD Server Admin (except the **Identity** and **Support** pages). This password is not related to the optional password for the control panel.

By default, *no* password is set, so a username and password are not required for access. Once you set a password, the username and password will be required for access to HD Server Admin (except the Identity and Support pages).

The default username that accompanies the password is "**administrator**". You may change it.

Network Configuration

Configuration → Network → TCP/IP page

Changes to all parameters on this page take effect after the next restart (see page 4-13).

IP Addressing

You may manually specify the IP address, the subnet mask, and the default gateway (router), or you may have them assigned automatically by a DHCP or BOOTP server.

The assignment method and addresses are not defaulted. They must be specified at the control panel when the server is started for the first time.

DNS

For domain name resolution for e-mail and SNMP notification, configure the name of the domain, and specify the address of the primary domain name server, and the secondary if needed. This is not set by default.

Note

- ❑ You must manually add a DNS entry for this server in your DNS database if you wish to access it by the server name rather than IP address.

Configuration → Network → Microsoft Networking page

Changes to all parameters on this page take effect after the next restart (see page 4-13).

Workgroup or Domain

For the **Workgroup/Domain** name setting, configure the name of the workgroup or Windows NT domain (whichever you are using) for the server. The default is the workgroup "**WORKGROUP**".

If you are using an NT domain, in addition to its name also specify the Windows name and address of the primary domain controller (PDC). This is needed for services such as DHCP and WINS.

Note

- ❑ If you are using **Passthrough Authentication** (see page 4-11), this **Workgroup/Domain** setting must contain the name of the NT domain corresponding to the authentication server specified in the **Server Name** and **Server IP** address settings.

Microsoft WINS

You can enable and specify the IP address of a Microsoft Windows Internet Naming Service (WINS) server. It is not set up by default.

The **NetBIOS Node Type** is defaulted to a setting appropriate to the setting of **Enable WINS**. A change is usually not required.

(For the SNMP configuration, see page 4-12.)

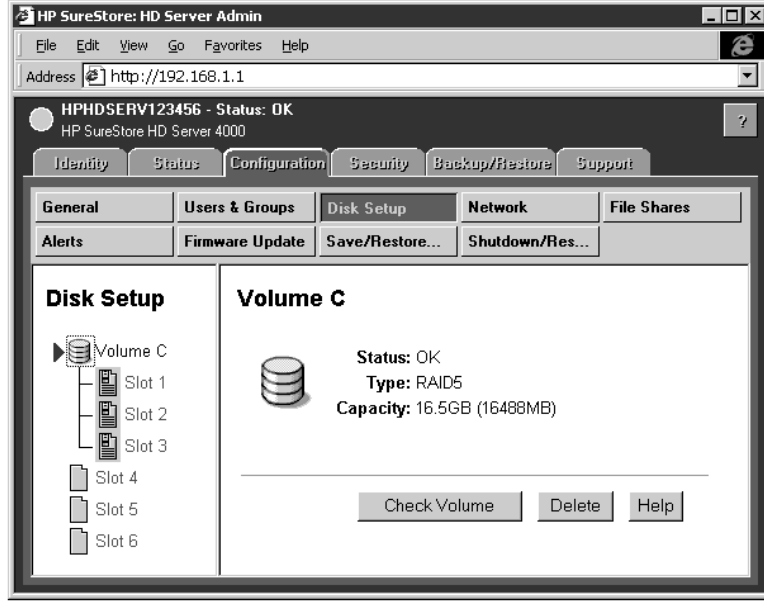
Set Up Disks

Configuration → Disk Setup page

Volume is Preconfigured

By default, the hard disk drives installed at the factory are built into a RAID 5 array—a single volume named “c”. For the HP J3290A and HP J3291A products, this consists of 3 drives; for the HP J3292A product, this consists of five of the six drives.

The diagram on the **Disk Setup** page shows all drives in the array connected with solid lines into **Volume C**. (For the HP J3292A product, the sixth drive, as a hot spare, is connected with a dotted line into the volume.) You can click on an individual drive to get status information for it. Using the **Help** button on this page is highly recommended, especially to derive all the status information available.



On this page you can add or change the role of disk drives as described in the following sections.

Add Disk Drives to the Volume

First perform the installation steps in chapter 7, “Adding Hard Disk Drives”, to install the drive modules in the server and to restart the server.

On the **Disk Setup** page, select the volume or an unused disk drive and click the **Expand Volume** button. If multiple drives are available, select all to be added. Click **Next>**. Confirm the selections are correct and click **Finish**.

Note

- Any previous contents of the added drives will be lost when they are reformatted.

The data in the volume will be redistributed over the increased number of drives. This may take one or two hours to complete. The volume will be on line—accessible to the administrator and clients—during this time. However, file access may be slower.

On the diagram, the added drives will be connected to the volume with solid lines.

Add a Disk Drive as the Hot Spare

Only one drive can be configured as a hot spare.

First perform the installation steps in chapter 7, “Adding Hard Disk Drives”, to install the drive module in the server and to restart the server.

On the **Disk Setup** page, select the unused disk drive. Click the **Add Spare** button to make it the spare drive. Click **Next>**. Confirm the selection is correct and click **Finish**.

On the diagram, the hot spare will be connected to the volume with a dotted line.

Once you have added the hot spare as described in this section, there are two alternatives for using it in the volume:

- If a drive that is part of the volume should fail, the spare disk drive automatically will be activated and will replace the failed disk drive. This takes place without interrupting service to clients. On the diagram, the status of the drive will be shown as failed. Replace it at a convenient time using this same procedure, “Add a Disk Drive as the Hot Spare”.
- You may change the installed disk drive from its role as a spare to become part of the volume, using the following procedure, “Add the Spare to the Volume”.

In both cases, you will no longer have the extra redundancy of a spare in case of a drive failure.

Add the Spare to the Volume

Once you have added the spare as described in the previous section, "Add a Disk Drive as the Hot Spare", you can change its role to be part of the volume. However, this drive will no longer provide the extra redundancy of a spare in case of a drive failure.

On the **Configuration → Disk Setup** page, click the spare disk drive. Click the **Expand Volume** button to add it to the volume. Click **Next>**. Confirm the selection is correct and click **Finish**.

The data in the volume will be redistributed over the increased number of drives. This may take one or two hours to complete. The volume will be on line—accessible to the administrator and clients—during this time. However, file access may be slower. You may want to delay client usage of the server until finished.

The added drives will be connected to the volume with solid lines.

Delete and Recreate the Entire Volume

You may need this procedure if you redeploy the server or need to rebuild the volume entirely.

CAUTION!

- ❑ To delete the volume means to destroy all the file data, along with the event log and the configured information on shares, users, groups, and passwords. Click the **Help** button on this **Configuration → Disk Setup** page for more information on the effects. Make sure you have backed up important data.

To delete the volume, click **Volume C** and click the **Delete** button. Perform the requested confirmations carefully. The server will automatically restart. HD Server Admin will be temporarily disconnected until the restart completes.

Once you are viewing this **Configuration → Disk Setup** page after the volume has been deleted, the disk drives will appear unused and no volume icon will be displayed.

You can create the volume when it has been deleted. There can be only one volume and it must have at least three disk drives. Click on the **Create Volume** button. By default, all disk drives are selected. If you want to exclude any of the disk drives from the volume, deselect each one. If you have more than three selected, you are given the option of using one as the hot spare. Perform the requested confirmations.

The diagram will show all selected drives in the array connected with solid lines into the volume, and any spare connected with a dotted line.

Set Up Shares

Security → Microsoft Networking page

Share Level, User Level

By default, **Security Model** for Microsoft networking is set to **Share Level** security rather than **User Level** security. You may change it here. The setting takes effect after the next restart (see page 4-13).

Note

The settings of associated parameters such as users, groups, and shares are saved when you switch security types. These settings will reappear if you switch back to **Share Level** and then back to **User Level**.

Configuration → File Shares page

File Shares

By default, the "**pub**" share is provided on the HD Server, with full access without a password. You may edit its permissions.

Use the **Add** button to add other shares and specify their names and paths. If the folder does not exist, you may create it. (You may also create a share for the entire volume "c", to include all the shares, for administrative use if you wish.)

Permissions

Use the **Permissions** button to change a share's permissions.

To specify the share permissions when using share-level security (which is set on the **Security → Microsoft Networking** page, as described above), you specify full-access passwords and read-only passwords for each share.

To specify the share permissions when using user-level security (which is set on the **Security → Microsoft Networking** page, as described above), you specify the users and groups for each share and what type of access they have, as follows.

- **No Access** No share access for the user or group
- **Read** Read files in the share
- **Change** Read, add, modify, and delete files in the share
- **Full Control** Read, add, modify, delete, and change permissions to files in the share

Set Up Users and Groups

Configuration → Users & Groups page

When user-level security for Microsoft networking is configured, use this page to create the users and groups for the server. This page is inaccessible when the default share-level security is configured. (See "Share Level, User Level" on page 4-10 above.)

Group member lists set up on this page can be used in granting permissions to file shares. (See "Permissions" on page 4-10 above).

For each client user, specify the user name, the full name, and any group memberships. In addition, you may specify each user password here, or you may pass through the authentication to a domain controller by enabling pass-through authentication. **Passthrough Authentication** requires further configuration, as described immediately below.

Configuration → Network → Microsoft Networking page

Pass-through Authentication

Pass-through authentication on the HD Server allows you to use a domain controller as an authentication server—to validate the user passwords on this server—so that you need not specify each password in both locations.

Note

- ❑ On the HD Server, pass-through authentication does *not* use the users and groups configured on an authentication server (domain server). Users and groups must be configured on this server using the **Configuration → Users & Groups** page (above on page 4-11).

For pass-through authentication of users to be in effect, you must do all the following:

- Specify the name and IP address of the Windows NT domain controller (authentication server) on this **Microsoft Networking** page.
- Set up the usernames and passwords on that domain controller. (This may already exist.) The usernames must be identical on that domain controller and on this HD Server.
- Enter the name of the domain for that domain controller and this server into the **Workgroup/Domain** field on the **Configuration → Network → Microsoft Networking** page. (See "Workgroup or Domain" on page 4-6.)
- Enable **Passthrough Authentication** on the **User** page, accessed using **Create** or **Edit** on **Configuration → Users & Groups** page.

These settings take effect after the next restart (see page 4-13).

SNMP

Configuration → Network → SNMP page

By default, SNMP is enabled on the HD Server.

Get, Set

Once SNMP is enabled, configure the SNMP agent on this server by specifying up to two community names for *get* and *set* operations.

Configuration → Alerts → SNMP page

Traps

By default, alerts for this server appear on its control panel, appear as events in HD Server Admin (see "Check Events" on page 4-14), and are enabled—sent as SNMP traps to network management tools such as HP TopTools and HP OpenView. Some additional events (such as restarts) are also sent through SNMP as traps.

If you wish traps for this server to be sent to a management station, ensure that SNMP is enabled, enter the community name to be used, and specify each management station to receive the traps by its IP address.

> If a DNS server is configured on the **Configuration → Network → TCP/IP** page, you may specify the management station by its DNS name, as long as the management station is currently accessible on the network.

Event Logging

Configuration → Alerts → Event Logging Threshold page

Server events are recorded in the event log (available on the **Status → Event Log** page), based on their seriousness rating. From most to least serious, the ratings are **Panic, Warning, Notice,** and **Continuation**. By default, the threshold for reporting the events is **Warning**, that is, events with a seriousness of **Panic** and **Warning** are recorded, and events of less seriousness (**Notice** and **Continuation**) are not recorded in the log.

E-Mail

Configuration → Alerts → Email page

E-mail Notification of Alerts

By default, alerts for this server appear on its control panel, appear as events in HD Server Admin (see "Check Events" on page 4-14), and are enabled as SNMP traps for viewing by network management tools such as HP OpenView and HP TopTools.

If you wish any alerts for this server to also be sent as e-mail to the administrator, then enable **Email Alerts**, specify the e-mail server by its IP address.

> If a DNS server is configured on the **Configuration → Network → TCP/IP** page, you may specify the e-mail server by its DNS name, as long as the server is currently accessible on the network.

Set Up Backup Schedule

Backup → Schedule page
Backup → Backup page

If an internal DAT tape drive is installed in the server or if an external tape drive is attached directly to the server (see chapter 8, “Adding a Tape Drive”), then use these backup pages to back up files stored on the server (as described in chapter 9, “Backing Up and Restoring Files”).

Back Up Changes

Configuration → Save/Restore Configuration → Save Configuration page

After you have made configuration changes, you should always use this page to store the new server and network configuration information on the volume for backup along with the file system configuration information and the data files. You can do this either before or after restarting the server if necessary (see “Restart” below).

To make the backup for disaster recovery, see “Making a Disaster Recovery Backup Tape” on page 9-7.

Restart the Server to Effect Changes

Configuration → Shutdown/Restart page

Many configuration changes, though they have been applied using **Apply**, require the server to be restarted before taking effect. You can perform the restart by selecting **Shutdown and Restart** on this page. HP Server Admin will be unavailable until the restart completes. See “Restart Procedures” on page 6-6 for more information.

Monitoring Status with HD Server Admin

Check Status

Identity page

The server name, product name, and the status of the server are shown at all times at the top of the HD Server Admin web pages, above the tabs. Use the **Help** button, where available, for full interpretation of all the data available to you. The **Identity** page, the initial page shown in HD Server Admin, also has some basic information such as server name and IP address.

Status → Summary page

For the detailed status of the components of your server, click on each module on the server graphic: the disk drive modules, the tape module, and the server module (click on the display panel to select the server module).

Configuration → Disk Setup page

For the detailed status of each disk drive as well as the volume and file system, use the **Disk Setup** page. Click on each drive in each slot. Click on **Volume C**.

Check File System

In the **Volume C** view on the **Configuration → Disk Setup** page (see previous paragraph), check the file system for errors by clicking the volume and the **Check Volume** button. When you confirm with **Yes**, users will be disconnected while the file system check is performed. Check the event log for results (see the next paragraph).

Check Events

Status → Event Log page

The event log is displayed on this page. You can control the seriousness threshold for the events that are recorded in the log using the **Configuration→Alerts→Event Logging Threshold** page (see “Event Logging” on page 4-12).

Check Backup Schedule and Log

Backup/Restore → Schedule page
Backup/Restore → Log page

Use the **Backup Schedule** page and the **Backup/Restore Log** page to maintain and verify your backup process that uses the internal and external tape drives.

5

Setting Up Client Access

The procedures used at client workstations on the network to access the HP SureStore HD Server 4000 are the same as for other Microsoft Windows 95, 98, or NT workstations and file servers. For easy access to the file system from client applications, the server's shares can be made available to each client system—"mapped" to a drive letter. After the share is mapped, the client accesses the server just as any other networked file server.

The client operating systems supported are Microsoft Windows 95, 98, and NT 4.0.

The directories available to a client user depend on the shares, security model, groups, and permissions that you set up using HD Server Admin (see chapter 4). Clients can map to one of the shares.

If you have made no changes in HP Server Admin, the default share is named "**pub**", to which all connecting client users have full access (share-level security without a password).

The server will be available on the network as soon as initialization is complete and it is in the normal operating state (see page 6-4).

Map Drive

For mapping, you need the IP address or server name of the HD Server, the share name, and either the share password (configured for share level) or the user name and password (configured for user level).

1. Look in Network Neighborhood for the server:

   Find it in the domain or workgroup defined in the setup of the installation wizard or HD Server Admin. The default location is the **Workgroup/Domain** named "**WORKGROUP**".

   > If that is the same workgroup or domain as the remote workstation you are using, the server will also be listed at the same level as the "Entire Network".

   The default server name is "HPHDSERV*hhhhhh*" where "*hhhhhh*" are the last six digits of the server's MAC address (LAN or hardware address). The server name may have been changed using the installation wizard or HD Server Admin.

   > If you need to find a specific server's MAC address, use view mode on the server's control panel. See page 3-2.

2. Use Windows' Map Network Drive function to map the user's share.

   a. Select the drive letter.

   b. For the path, use the Universal Naming Convention:

      `\\<server>\<share>`

      where `<server>` is either the server name or IP address and `<share>` is the alias for the physical path defined on the **File Shares** page in HD Server Admin. The default share is "**pub**".

   c. *For Windows NT only:*

      - If the user-level security model is in effect (see "Set Up Shares" on page 4-10), for "**Connect As**" you need to use the name configured for User on the **Configuration → Users & Groups** pages (described on page 4-11) in HD Server Admin—if the name and password are different from those used for the workstation login account.
      - If the share-level security model is in effect (as it is by default), then ignore "**Connect As**".

d. *For Windows NT, 95, 98:* Use the password as follows:

- If the user-level security model is in effect (see "Set Up Shares" on page 4-10), then the password is configured on the **Configuration → Users & Groups** pages in HD Server Admin (as described on page 4-11). If the password is the same as that used for the workstation login account, it need not be specified.

  If pass-through authentication is in effect with user-level security, then the password is configured on the domain controller (which is specified on the **Configuration → Network → Microsoft Networking** page in HD Server Admin as described above on page 4-6).

- If the share-level security model is in effect (as it is by default), then the password is configured on the **Configuration → File Shares** page in HD Server Admin (as described above on page 4-10).

Shutting Down and Restarting

Use this chapter when you are starting up, or shutting down, or restarting the server *after* the first time you started it. When you start the server for the first time, refer instead to one of the following:

- *Quick Setup* sheet
- "Connecting and Starting Up" on page 2-8

Starting Up the Server

Startup Steps

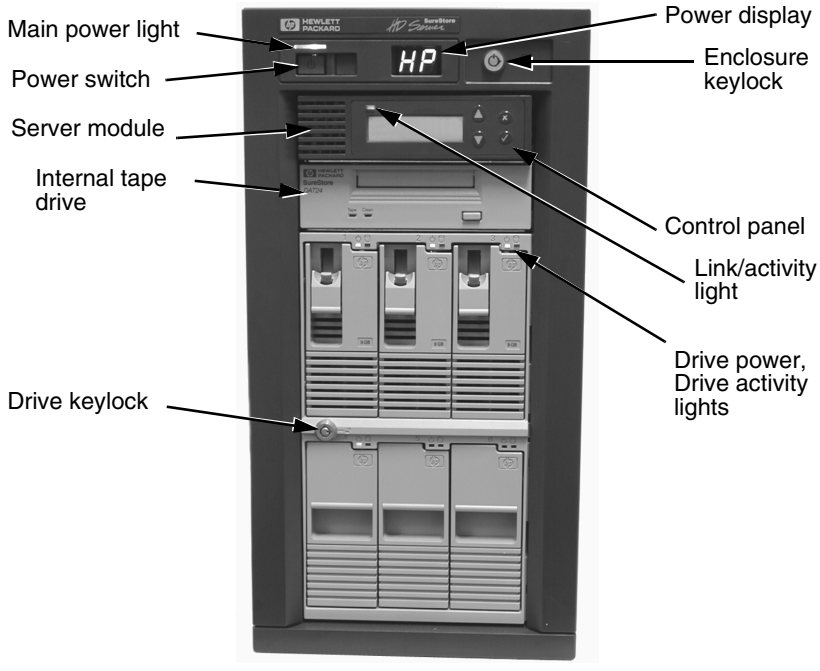
1. Attach the two power cords to the rear of the server and to power outlets (preferably to separate power circuits).
2. On the front of the server, switch on power. (See the front view illustrated on page 6-2.)
3. Verify that:
   - The main power light (LED) above the power switch is ***on*** and the power display (2-character LED) displays HP.
   - Drive power and drive activity lights (LEDs) blink to indicate self-tests. The drive power light on each disk drive module remains ***green***.
   - The control panel (LCD) displays self-testing and loading messages.

Note

❑ If you see any of the following exceptions to the verification checks listed above, refer to chapter 11, "Resolving Problems with Your Server".

- Lights described above fail to go on.
- Power display shows LF or PF or FF.
- Control panel displays FAIL or FAULT anywhere in the text.
- Control panel remains unchanged for more than 10 seconds.

Front View of HD Server



4. The next display on the control panel depends on whether this is the first time the server has been started:

   - If this is the first time, refer to the *Quick Setup* sheet or to "Connecting and Starting Up" on page 2-8.
   - If this is *not* the first time, the control panel will display the following countdown from 10 to 0 seconds.

     ```
     Press ✔ to enter
     Setup Mode: 10
     ```

     If you wish to alter the configuration or operation of the server at this time, press ✔ before the countdown of 10 seconds is completed. You will enter the control panel's setup mode. See step 5 below.

     If you do *not* wish to alter the configuration or operation of the server, do nothing and skip to step 7 below.

5. If you do press ✔ before the countdown of 10 seconds is completed, you will be prompted for the control panel password if you have set one. (See “Change Password” in the table on page 3-6.)

   ```
   Enter Password:
   
   ```

   The first character position on the second line of the display is flashing. To specify each character, you may:

   - Press ▲ (up button) on the control panel to cycle through each letter of the alphabet and each digit.
   - Press ▼ (down button) on the control panel to cycle through each letter and digit in the opposite sequence.
   - Accept the character by pressing ✔. The next character position flashes. Specify that character in the same way.
   - You may go back (left) by pressing ✘ for each character until the needed character is flashing. Then press ▲ or ▼ to change it.

   When the password is complete, press ✔ at the first blank character position.

6. The control panel display alternates the following instructions for setup mode:

   ```
   Use ↑ or ↓ key
   to move up/down
   ```

   ```
   Use ✘ to cancel
   Use ✔ to select
   ```

   Press any control panel button to proceed with setup mode, and refer to page 3-1 for more information on control panel usage. Return to step 7 below after you complete the setup mode tasks.

7. Startup will continue until the server is ready for normal operation, which is described on page 6-4.

   During this time, the server establishes the link speed—10 or 100 megabits per second—and duplex setting—full or half—to match the attached network.

Normal Operating State

When the server has been initialized and the file system is ready, the server is ready for client access or for further configuration. The following are indicators of normal operation. Refer to the front view illustration on page 6-2.

- The main power light above the power switch is ***on***.
- The drive power lights on operating drives are ***green*** and the drive activity lights flash when data is read or written.
- The control panel displays the server name on the first line and alternates on the second line between the date and time, whether there are any alerts to read, and the IP address. Examples:

HPHDSERV345ABC Tue Jun 1 14:59	
HPHDSERV345ABC no alerts	
HPHDSERV345ABC 192.168.001.001	*not shown if password is set*

  It is normal for the IP address to *not* be shown if a control panel password is currently set.

  It is *not* normal for the IP address to be `000.000.000.000`. The server is inaccessible in this case.

- The link/activity light above the control panel display is ***green*** when the network link is established. It ***blinks*** for each packet transmitted or received.
- The server is accessible over the network to client users using standard network file system protocols. The server can be administered using the embedded HD Server Admin (with a web browser). For network setup and administration refer to chapter 4. For client access see chapter 5, “Setting Up Client Access”.

If your server deviates from the above conditions after it has been set up, see chapter 11, “Resolving Problems with Your Server”.

Shutting Down, Restarting, Cycling Power

The various types of restarting described in this section contain references to operating states as described on page 6-10.

CAUTION!

- ❑ Switching the server's power ***off*** without following the appropriate shutdown procedure can result in lost user data. Always make sure it is safe to cycle the power before doing so. Alert users that the server will be off line (inaccessible) while shut down; then complete the shutdown procedure before switching off power.

Shutdown Procedures

The shutdown procedures are used to disconnect client sessions and to halt server operation, and are part of other procedures recommended in this manual. The methods available to you, listed below, depend on the state of the server.

Note

- ❑ Before doing any of the methods listed below, notify users that the server will be off line and recommend they close all files.

- From the initialization state, use the control panel's setup mode. Scroll to the `Shutdown Server` parameter. Press ✔ and confirm with ✔ again.
- From the normal operating state, you can use HD Server Admin's **Configuration → Shutdown/Restart** page. Click **Shutdown and Restart** and **Apply**.
- From the normal operating state, you can use the control panel's view mode. Press ✔ twice. Use ▲ or ▼ to scroll to the `Shutdown Server` parameter. Press ✔ and confirm with ✔ again.

When the server is shut down, it is halted with the control panel displaying `Power off or ✔ to restart` until you take action. You can either restart it by pressing ✔, or you can switch the power off.

Restart Procedures

The restart procedures are used to effect network setup changes, and are part of other procedures recommended in this manual. The methods available to you, listed below, depend on the state of the server.

- From the normal operating state, you can shutdown and immediately restart the server using HD Server Admin's **Configuration → Shutdown/Restart** page. Click **Shutdown and Restart** and **Apply**.
- From the shutdown state, you can restart the server at the control panel by pressing ✔ when it displays `Power off or ✔ to restart`.
- From fault conditions that halt or freeze the server, it will automatically restart if the **Automatic Restart** parameter is enabled. If the parameter is disabled (as it is by default) or auto-restart has occurred three times, then the server halts and displays a message on the control panel instructing you to `Power off or ✔ to restart`.
- From fault conditions causing HD Server Admin to be unavailable, perform the shutdown or power cycle procedure from the control panel (see those procedures in this section).

After restarting, the server performs the initialization process, described starting at step 3 in "Startup Steps" on page 6-1.

Power Cycle Procedure

Use the power cycle procedure only when necessary to replace failed components or to move the server to another physical location or network location (that is, to connect a network cable). Hard disk drive modules can be replaced using just the shutdown procedure.

CAUTION! ❑ Switching the server's power ***off*** without following the appropriate shutdown procedure can result in lost user data. Always make sure it is safe to cycle the power before doing so. Alert users that the server will be off line (unavailable) while shut down; then begin the shutdown procedure before switching off power, as described here.

1. Perform a shutdown procedure using one of the methods described in "Shutdown Procedures" on page 6-5.
2. When prompted `Power off or ✔ to restart` on the control panel display, press the power switch to switch power off.
3. When ready to restart the server (at least 10 seconds later, so that the disk drives stop spinning), switch on the power switch and follow the initialization process starting at step 3 on page 6-1.

Reset to "First Time" Defaults Procedure

Once the server has been installed, its configuration can be changed by using the control panel during initialization or by using HD Server Admin after initialization. But if your changes produce errors so serious that you cannot succeed in changing back to a working configuration, then you can return to the networking configuration for the first-time installation by using this procedure. You may also need this procedure if you redeploy the server (and you may need to recreate the volume, per page 4-9).

This operation does *not* affect the file system. It does *not* change the current configuration of the volume, shares, users, groups, and backup schedule.

This procedure must be done from the initialization state, at the control panel, as follows:

1. Restart the server. When the control panel displays `Press ✔ to enter Setup Mode`, press ✔ before the countdown completes. When prompted `Use ✔ to select`, press ✔ again.
2. Use the ▼ button to scroll to the `Reset Defaults` parameter and press ✔.
3. When prompted `Press ✔ to reset network settings`, press ✔.
4. When prompted `Turn off and restart server`, press the power switch to switch power off.
5. Wait 10 seconds for the disk drives to stop spinning. Then switch on the power switch. Follow the initialization process starting at step 4 on page 2-8—as if you are installing a server for the first time.

The resulting default settings are described in the following table.

What is Reset by "Reset Defaults"?

What is reset?	Where can you set it?	To what default is it reset?
IP Method	Control panel in setup mode HD Server Admin: Configuration→Network→TCP/IP	This parameter returns to a forced choice; it cannot remain defaulted.
IP Address	Control panel in setup mode HD Server Admin: Configuration→Network→TCP/IP	000.000.000.000 You are prompted to specify an address during initialization; the default is an illegal address.
Subnet Mask	Control panel in setup mode HD Server Admin: Configuration→Network→TCP/IP	Default depends on class (A, B, C, D) of IP address when set.
Default Gateway	Control panel in setup mode HD Server Admin: Configuration→Network→TCP/IP	000.000.000.000 (no gateway)
Link Speed	Control panel in setup mode	Auto
Domain (DNS)	HD Server Admin: Configuration→Network→TCP/IP	(blank)
DNS Server (Primary)	HD Server Admin: Configuration→Network→TCP/IP	0.0.0.0 (cleared)
DNS Server (Secondary)	HD Server Admin: Configuration→Network→TCP/IP	0.0.0.0 (cleared)
Workgroup/ Domain	HD Server Admin: Configuration→Network→Microsoft Networking	WORKGROUP
Passthrough Authentication Server Name	HD Server Admin: Configuration→Network→Microsoft Networking	(blank)
Passthrough Authentication Server IP	HD Server Admin: Configuration→Network→Microsoft Networking	0.0.0.0 (cleared)
Primary WINS Server	HD Server Admin: Configuration→Network →Microsoft Networking	0.0.0.0 (cleared)
NetBIOS Node Type	HD Server Admin: Configuration→Network→Microsoft Networking	B-node
Automatic Restart	Control panel in setup mode HD Server Admin: Configuration→General→Automatic Server Restart	Off (disabled)
Server name	HD Server Admin: Configuration→General→System Information	HPHDSERV###### (last 6 digits of the MAC address)
Location	HD Server Admin: Configuration→General→System Information	(blank)

What is reset?	Where can you set it?	To what default is it reset?
Contact	HD Server Admin: Configuration→General→System Information	(blank)
Phone	HD Server Admin: Configuration→General→System Information	(blank)
Asset#	SNMP *set*	(blank)
Support URL	HD Server Admin: Configuration→General→System Information	(blank)
Default URL	SNMP *set*	(blank)
Management server URL	SNMP *set*	(blank)
Time Zone	HD Server Admin: Configuration→General→Date & Time	-08:00 (Pacific Time) (Date and Time displayed reflect any time zone change.)
Automatically adjust clock for daylight savings	HD Server Admin: Configuration→General→Date & Time	Enabled
SNMP Enabled	HD Server Admin: Configuration→Network→SNMP	Yes (enabled)
GetCommunityName	HD Server Admin: Configuration→Network→SNMP	Public Private
SetCommunityName	HD Server Admin: Configuration→Network→SNMP	Private
TrapCommunityNam e	HD Server Admin: Configuration→Alerts→SNMP	Public
SNMP Alerts	HD Server Admin: Configuration→Alerts→SNMP	Enabled
Authentication Alerts	HD Server Admin: Configuration→Alerts→SNMP	Disabled
TrapDestination	SNMP *set* HD Server Admin: Configuration→Alerts→SNMP	(1–4 blank)
Email Alerts	HD Server Admin: Configuration→Alerts→Email	Disabled
Outgoing Mail (SMTP) Server	HD Server Admin: Configuration→Alerts→Email	(blank)
Recipient Mail Address	HD Server Admin: Configuration→Alerts→Email	(blank)
Event Logging Threshold	HD Server Admin: Configuration→Alerts→Event Logging Threshold	Warning

Summary of Operating States

State	Tasks You may Perform or Behavior in the State
Initialization State	Automatically enter normal operating state if IP address is already set.
	Automatically effect network setup changes made in HD Server Admin.
	Enter setup mode on control panel.
	`Reset Defaults` using setup mode on control panel.
	Enter boot mode on the control panel to select the alternate firmware version.
	First-time installation: Automatically be prompted for IP address setting.
	First-time installation: Automatically run HD Server Admin's install wizard.
Normal Operating State	Use HD Server Admin for monitoring, for setting up users and network configuration, for performing backups and restores, and for other administration and configuration tasks.
	Serve network clients.
	Check alerts on control panel.
	Shut down server using control panel or HD Server Admin.
	Restart server from control panel (or automatically after shutdown from HD Server Admin).
Fault States	If control panel displays `FAIL`, note the error code displayed with it, and then switch off power and call for support.
	If the normal control panel display freezes or another critical error occurs or `FAULT` appears, then an alert is sent and an error is logged. The server will then auto-restart if so configured. If auto-restart is not configured or three auto-restarts have occurred, then the server will halt until power is cycled.
Shutdown State (with Power On)	Remove and insert hard drives for expansion or repair.
	Restart server from control panel.
	Switch power off.
Power Off State	Attach network cable.
	Add internal tape drive module or external tape drive.
	Replace server module and other failed components.
	Remove and insert hard drives for expansion or repair. (This can also be done during shutdown state.)

The initialization state is described starting at page 6-1, and the normal operating state is described on page 6-4. The server should be shut down before power is switched off; these procedures are described on page 6-5. Restarting the server, so that it reenters the initialization state, is described on page 6-6.

Adding Hard Disk Drives

You can upgrade the server's capacity by adding hard disk drive modules, for a total of six per HD Server. You can also replace existing drives with higher-capacity drives. This chapter describes how to install and incorporate an additional drive into your file system, either as a spare or as part of the RAID volume. If you are replacing a drive, either to repair or to upgrade the capacity of all your drives, then see chapter 11, "Resolving Problems with Your Server", for drive removal. Then return to this chapter for the procedure to install the replacement drive.

Hard Disk Drive Modules Available

HP Product Name	Product Number
HP 9.1 GB Hot Swap Ultra Fast&Wide SCSI-2 Disk Module	D4289A*
HP 9.1 GB 10K rpm Hot Swap Ultra Wide Disk Module	D6019A*
HP 18.2 GB Hot Swap Ultra Disk Module	D5039A*
HP 4.2 GB Hot Swap Ultra Fast&Wide SCSI-2 Disk Module	D3583C*
HP 4.2 GB 10K rpm Hot Swap Ultra SCSI Disk Module	D4903A*

* Letter suffix may increment

Notes

- ❑ When used in the HD Server, these modules cannot be hot swapped while serving users. They only can be "warm swapped", following a shutdown, with the power on or off.
- ❑ The RAID volume capacity is limited by the size of the smallest drive. For example, if the existing drives are HP D4289A 9.1-GB models, then adding an HP D5039A 18.2-GB model will utilize only 9.1 GB of the available disk space. Adding an HP D3583C 4.2-GB model will force all drives in the volume to use only 4.2 GB.

Install the Drive Module

Most of the documentation that accompanies your newly purchased module is related to other products in which it may be installed. For the HD Server, use the following installation instructions instead.

To use a replacement that is on hand, also use these instructions.

CAUTION! Disk drives are more susceptible to shock, vibration, and electrostatic discharge when they are not installed in the server.

- ***To avoid physical damage:***

  Hard disk drives are very susceptible to mechanical shock and can be damaged by a drop as short as one-quarter of an inch. Take care when unpacking and handling the disk drive. If the drop would crack an egg, it will probably damage the drive.

- ***To avoid electrostatic damage:***

  Protect the hard disk drive from static electricity by leaving it in its anti-static bag until you are ready to install it. Before handling the hard disk drive module, touch a grounded unpainted metal surface (such as the rear sheet-metal surface on the HD Server) to discharge static electricity. When you remove the drive module from the anti-static bag, handle it only by the frame or tray.

  Do not touch the electrical components. Place the module on the anti-static bag whenever you set it down.

- ***To avoid damage to the SCSI connection:***

  Do not touch the SCSI edge connector pins; the oils on your skin could weaken the contact.

Installation Steps

1. Notify users of the interruption in service while the server is shut down, and recommend that they close all files. It may take one or two hours to complete an expansion of the volume. If the drive is not immediately added to the volume or if it is added as a spare, the interruption instead may take several minutes only.

2. Shut down the server and leave the power on, using one of the following methods. (If the server is *not* powered on, skip this step.)

   - Use the control panel's view mode, as follows: Press ✔ twice. Use the ▲ or ▼ button to scroll to the `Shutdown Server` parameter. Press ✔ and confirm with ✔ again.
   - Use HD Server Admin's **Configuration** → **Shutdown/Restart** page. Click **Shutdown and Restart** and **Apply**.

   The server will halt and display on the control panel:

   ```
   Power off or
   ✔ to restart
   ```

3. Unlock the drive keylock if necessary (see illustration below). The unlocked position is marked beside the keylock—pointing toward the right side of the server.

Removing the filler panel

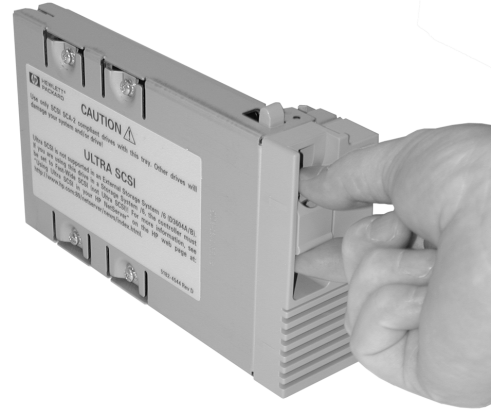
4. Remove the filler panel from the drive slot by pulling it straight out (see illustration above).

CAUTION! ❑ Keep the filler panel. To properly operate the server in the future without a drive in the slot, the slot must again be covered with the filler panel.

5. Unpack the new disk drive module if necessary. Remove the plastic shipping plug from between the drive lever and the locking tab by pulling it out.

6. On the drive module, press the locking tab down while you pull the drive lever out and fully up. The locking pin on the top of the drive fully retracts to allow insertion into the slot.

Unlocking the drive lever.



(If you have removed the drive module from another slot or another server, rather than from the shipping box, the drive lever may already be in this position.)

7. Holding the module only by its plastic front bezel and the metal tray, slide the module slowly into the slot until it stops, at the end of the drive lever. The module remains extended about 5 mm or 0.2 inches from the adjacent surfaces in this position. See the illustration below.

With drive lever pulled out, slide module into slot until it stops.

8. Press the drive lever down until it latches. The module fully engages, while the locking tab and pin snap into place. Both the front of the module and the drive lever are flush with the adjacent surfaces in this position.

Pushing down the drive lever to snap module into place.

9. Lock the drive keylock if desired to prevent drive removal. The locked position is marked beside the keylock—pointing toward the top of the server.

Startup and Configuration

1. The startup procedure depends on whether the server is powered *off*, or is powered *on* but idling in the shutdown state.

   - If the server is being installed and started for the first time, go now to the installation procedure on the *Quick Setup* sheet, or in this manual go to "Connecting and Starting Up" on page 2-8 and continue with the procedures in chapter 2.

     Because your server was initialized with the drives installed at the factory, you must configure the new drives. You will find the procedure in chapter 4 in the section "Set Up Disks" on page 4-7.

   - If the power is *off* and the server has already been installed, restart the server by switching the power *on*. Allow the server to fully initialize, and skip to step 2.

   - If the power is *on* and the control panel displays the following:

     ```
     Power off or
     ✔ to restart
     ```

     Then start up the server by pressing the ✔ button on the control panel. Allow the server to fully initialize. The volume in its previous state is now available to clients again.

2. From the normal operating state, use a browser at a network workstation to start up HD Server Admin. See "Using a Web Browser on the Network" on page 4-1 and "Setup with HD Server Admin" on page 4-3.

3. Select the **Configuration** tab and select the **Disk Setup** button. Click on a disk drive in the diagram to get status information. Your new disk drives will appear in their slots as unused and unconnected to the volume. They will serve clients after you perform one of the procedures in the sections on page 7-7 to give each drive a role as part of the RAID volume or as a hot spare.

4. After giving the drive a role in the volume using either of the procedures on page 7-7, notify the clients that the volume is available in its expanded or more fully redundant status.

Add Disk Drives to the Volume

On the **Disk Setup** page, select the volume or an unused disk drive and click the **Expand Volume** button. If multiple drives are available, select all to be added. Click **Next>**. Confirm the selections are correct and click **Finish**.

Note

- ❑ Any previous contents of the added drives will be lost when they are reformatted.

The data in the volume will be redistributed over the increased number of drives. This may take one or two hours to complete. The volume will be on line—accessible to the administrator and clients—during this time. However, file access may be slower.

On the diagram, the added drives will be connected to the volume with solid lines.

Add a Disk Drive as the Hot Spare

Only one drive can be configured as a hot spare.

On the **Disk Setup** page, select the unused disk drive. Click the **Add Spare** button to make it the spare drive. Click **Next>**. Confirm the selection is correct and click **Finish**.

On the diagram, the hot spare will be connected to the volume with a dotted line.

Once you have added the hot spare as described in this section, there are two ways that it may in the future be used in the volume:

- If a drive that is part of the volume should fail, the spare disk drive automatically will be activated and will replace the failed disk drive. This takes place without degrading service to clients. On the diagram, the status of the drive will be shown as failed. Replace it at a convenient time using this same procedure, “Add a Disk Drive as the Hot Spare”.
- You may change the installed disk drive from its role as a spare to become part of the volume, using the procedure “Add the Spare to the Volume” on page 4-9.

In both cases, you will no longer have the extra redundancy of a spare in case of a drive failure. Use the procedures in this chapter to add another spare.

Adding a Tape Drive

HP J3291A SureStore HD Server 4000 includes a DAT40i DDS-4 internal tape drive. To use the internal tape drive, proceed directly to chapter 9, “Backing Up and Restoring Files”. You may also attach one external tape drive; see “External tape drives” below.

HP J3290A or HP J3292A SureStore HD Server 4000 can be upgraded with internal and/or external backup products as follows:

- Tape drives dedicated to the HD Server, using the backup and restore features included with the HD Server:

  Internal tape drives to install into the server:

HP Product Name	Product Number
HP SureStore DAT24i DDS-3 drive (and 68-pin female to 50-pin female SCSI adapter)	C1555D* (and 5064-4688)
HP SureStore DAT40i DDS-4 drive	C5686A*

* Letter suffix may increment

  External tape drives to attach to the server:

HP Product Name	Product Number
HP SureStore DAT24e DDS-3 drive	C1556D*
HP SureStore DAT40e DDS-4 drive	C5687A*
HP SureStore DLT40e	C1579A*
HP SureStore DLT70e	C5658A*
HP SureStore DLT80e	C5726A*

* Letter suffix may increment

- Network Backup: Back up and restore volumes and files in the HP SureStore HD Server 4000, as you would any other network file server that does not use an agent. The remainder of the chapter is inapplicable.

Installing an Internal Tape Drive

You can install a tape drive listed in the "Internal tape drives" table on page 8-1.

CAUTION! ***To avoid damage:***

- ❑ Verify that the server's power cords are disconnected before you do step 10 below.
- ❑ Protect the tape drive from static electricity. Before handling the tape drive, touch any unpainted metal surface (such as the grounded rear sheet-metal surface on the HD Server) to discharge static electricity. Before installing the tape drive module, touch an unpainted metal surface on the drive.

Steps

1. Unpack the tape drive product. Verify that you have the following components. Other materials are not applicable to the HD Server.
   - Tape drive
   - Tray for L Series
   - Four Phillips screws (in bag)
   - *Optional:* Power extension cable (see step 17)
   - Data cartridge: DDS-3 for DAT24i, DDS-4 for DAT40i
   - DDS cleaning cartridge
   - Customer Care and warranty
   - *Installation Guide.* Useful instructions include:
     - Checking the drive's SCSI ID
     - Attaching the L-series mounting tray
     - Attaching the SCSI cable and power cable extension
     - Loading and unloading a cartridge

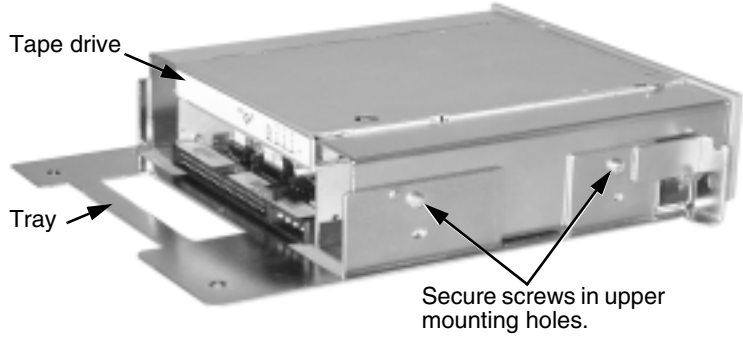
     Other instructions are not applicable to the HD Server.
   - Electronic *User's Guide* on *HP SureStore Tape CD-ROM*. Useful instructions include:
     - Items listed above for the printed *Installation Guide*
     - Cleaning with the DDS cleaning cartridge

     Other instructions are not applicable to the HD Server.
2. Assemble the following tools:
   - Torx #15 driver for enclosure filler panel
   - Flat-blade screwdriver for opening enclosure side door
   - Phillips screwdriver for attaching drive mounting tray
   - HD Server's enclosure key for opening the keylock

Note: SCSI ID 3

3. On the rear of the tape drive, ensure that its SCSI ID is set to 3. Refer to the electronic *User's Guide* on the *HP SureStore Tape CD-ROM* for instructions.

4. Attach the tape drive into the L-series mounting tray: Use the four Phillips screws provided in the screw kit. Use the topmost mounting holes in the tray. The tray extends from the back of the tape drive. See the illustration.



5. If the server is *not* powered on, skip to step 9.
6. Notify users of the interruption in service while the server is shut down. Recommend that users close all files.
7. Shut down the server, using one of the following methods.
   - Use the control panel's view mode, as follows: Press ✔twice. Use the ▲ or ▼ button to scroll to the `Shutdown Server` parameter. Press ✔ and confirm with ✔ again.
   - Use HD Server Admin's **Configuration** → **Shutdown/Restart** page. Click **Shutdown and Restart** and **Apply**.
8. When you see the following display on the control panel, use the power switch to switch the server's power ***off***.

   ```
   Power off or
   ✔ to restart
   ```

9. Disconnect both power cords from the rear of the server.

WARNING! ❑ Never open the side door of the enclosure when power cords are attached. You risk electrical shock even when the power switch is ***off***.

10. Use the server's key to unlock the enclosure keylock if necessary. (See illustration on page 2-7.)

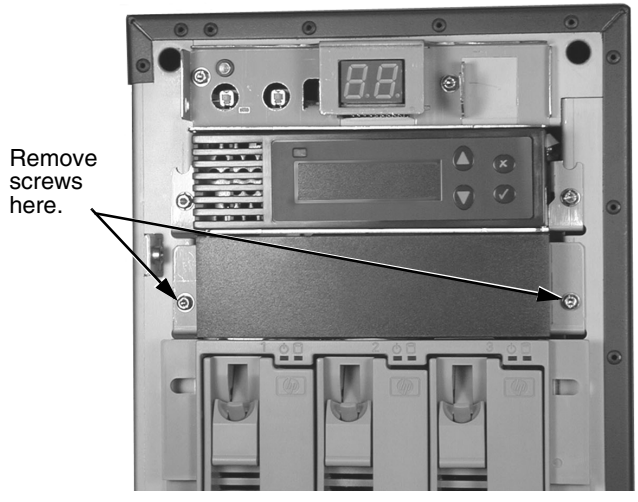
11. Remove the front bezel from the server: Grasp the indentations at the sides near the top of the bezel. Pull the top forward, swinging it down to clear the retaining clips at the bottom of the enclosure. Lift the bezel away from the enclosure and set aside.

Removing the front bezel.

12. Open the side door: Loosen the door mounting screws using a flat-blade screwdriver. The screws remain attached to the door. Swing the door open, away from the front of the server. (See the illustration below.) For the most working space, you may lift the door up and off the enclosure at the rear, and set it aside.

Opening the side door, once the front bezel has been removed.

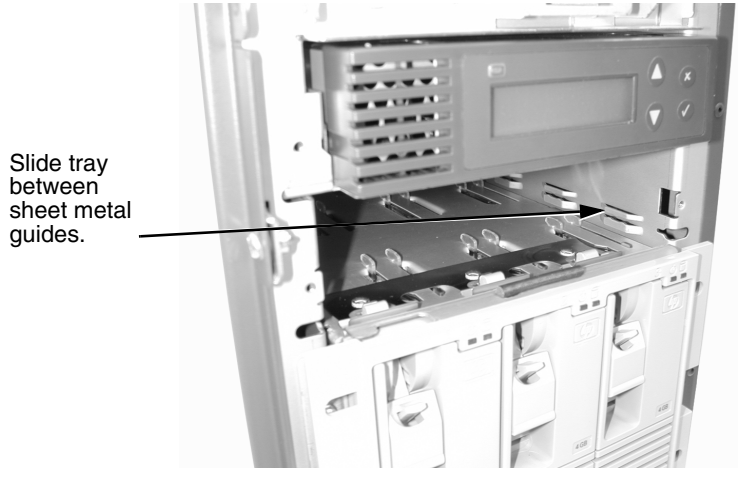
13. Remove the filler panel covering the tape drive slot at the front of the server (illustrated below), using a Torx #15 driver to remove the two screws. Reserve the screws for attaching the tape drive.



CAUTION! ❑ Keep the filler panel. To properly operate the server in the future without a tape drive in the slot, the slot must again be covered with the filler panel.

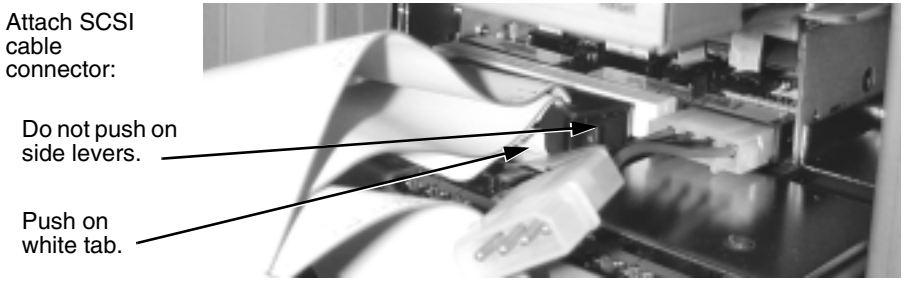
14. Insert the tape drive module (consisting of the tape drive in its tray) into the uncovered tape drive slot at the front of the server.

    The tray must fit between two sheet metal guides at both sides of the enclosure. If the tray does not slide easily, it may not be inside the guides. When the tray is fully inserted, its front holes align with the holes in the metal front of the enclosure.



15. Use the Torx #15 screws that you removed with the filler panel in step 13 above, to secure the tape drive module to the enclosure.

16. Inside the enclosure at the rear of the tape drive, attach the SCSI cable connector labeled “Tape” to the SCSI connector or adapter at the back of the drive. (“Tape” faces upward.) Push on the white tab to slowly and firmly push the connector. (See illustration below.) When fully secured, the two levers at the sides of the connector will pop outward.

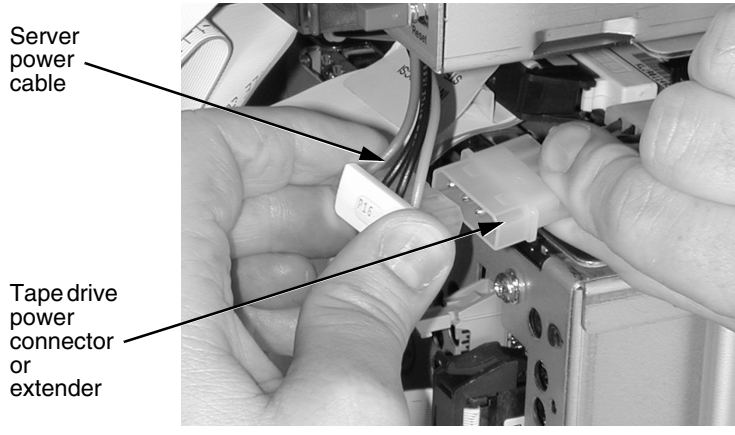


If installing an HP DAT24i drive, a 68-pin female to 50-pin female SCSI adapter is required. You can order HP part number 5064-4688.

CAUTION! ❑ Do *not* push on the levers to secure the SCSI connector. Push on the back of the connector on the SCSI cable instead. Care and firmness are required due to the large number of small pins.

17. Inside the enclosure, find the unattached connector on the power cable (*not* the connector at the end of the cable that is used for the server module above the tape drive). Attach it to the power connector to the right of the SCSI connector.

    If installing an HP DAT24i tape drive, the power extension cable found in the tape drive packaging may help you fit the power cable. See the illustration below.



18. Reinstall the side door by reversing the actions you performed in step 12 above.
19. Reinstall the front bezel by reversing the actions you performed in step 11 above.
20. Lock the enclosure keylock if desired to prevent removing components inside the enclosure.
21. If the server has not yet been installed, go now to the installation procedure on the *Quick Setup* guide, or in this manual go to "Connecting and Starting Up" on page 2-8 and continue with chapter 2.
22. On the rear of the server, reattach the power cables.
23. On the front of the server, switch on power and verify normal operation (page 6-4). Notify users that file service is resumed.
24. Refer to chapter 9 for configuration of backup functions.

Note

- Tape drives must be cleaned regularly for reliable service. Follow cleaning instructions in the electronic *User's Guide* on the *HP SureStore Tape CD-ROM*.

Attaching an External Tape Drive

You can install an tape drive listed in the "External tape drives" table on page 8-1.

1. Unpack the tape drive product. Verify that you have the following components. Other materials are not applicable to the HD Server.
   - Tape drive unit
   - SCSI terminator attached to back of unit, or separately available.
   - SCSI cable
   - Power cord
   - Data cartridge: DDS-3 for DAT24i, DDS-4 for DAT40i, or DLT tape IV for DLT products
   - Cleaning cartridge
   - Customer care and Warranty
   - Electronic *User's Guide* on *HP SureStore Tape CD-ROM*. Useful instructions include:
     - Ordering Information
     - Loading and unloading a cartridge
     - Cleaning with the cleaning cartridge

     Other instructions are not applicable to the HD Server.
2. If the server is *not* powered on, skip to step 6.
3. Notify users of the interruption in service while the server is shut down. Recommend that users close all files.
4. Shut down the server, using one of the following methods.
   - Use the control panel's view mode, as follows: Press ✔ twice. Use the ▲ or ▼ button to scroll to the `Shutdown Server` parameter. Press ✔ and confirm with ✔ again.
   - Use HD Server Admin's **Configuration** → **Shutdown/Restart** page. Click **Shutdown and Restart** and **Apply**.
5. When you see the following display on the control panel, use the power switch to switch the server's power ***off***.

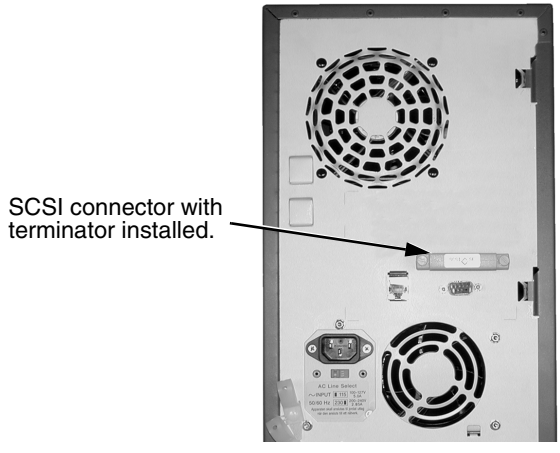
   ```
   Power off or
   ✔ to restart
   ```

6. Remove the SCSI terminator from the SCSI connector on the rear of the server, if it remains installed. Reserve the terminator.

Note: SCSI ID 5

7. On the tape drive unit, set its SCSI ID to 5. Refer to the electronic *User's Guide* on the *HP SureStore Tape CD-ROM* for instructions.

8. Attach one end of the SCSI cable accompanying your tape drive to the rear of the tape drive unit.
9. Attach the other end of the SCSI cable to the SCSI connector on the rear of the server. If it does not have the correct connector, refer to the "Ordering Information" in the electronic *User's Guide* on the *HP SureStore Tape CD-ROM* for the correct cable.
10. Ensure that a SCSI terminator is attached to the tape drive unit (or the end of the SCSI bus). The terminator you remove from the HD Server's SCSI connector (HP part no. 5063-5324) may be moved to the tape drive. Otherwise, you may use the SCSI terminator attached to the rear of the tape unit (shown below).



11. If the server has not yet been installed, go now to the installation procedure on the *Quick Setup* guide, or in this manual go to "Connecting and Starting Up" on page 2-8 and continue with chapter 2.
12. Attach the power cord to the tape drive unit and to a power source. Power up the unit (***before*** switching ***on*** the server's power).
13. On the front of the server, switch on power and verify normal operation (page 6-4). Notify users that file service is resumed.
14. Refer to chapter 9 for configuration of backup functions.

Note

- ❑ Tape drives must be cleaned regularly for reliable service. Follow cleaning instructions in the electronic *User's Guide* on the *HP SureStore Tape CD-ROM*.

Using Network Backup with the HD Server

HP SureStore HD Server 4000 supports share access for network backup applications. It does *not* run an agent for backup applications as some PC-based servers can run.

Backing Up and Restoring Files

This chapter describes how to use an installed tape drive to back up files stored on the server and to restore files to the server. It includes:

- Using an internal or external HP DAT or DLT tape drive
- Using tapes
- Scheduling backups
- Making a disaster recovery tape backup
- Restoring specific file requests
- Restoring the entire volume from backup

Share access to the HD Server allows it to be backed up using a network backup process. A network drive can be mapped to any share on the HD Server (including the entire volume, if available as a share) for backup purposes.

Using an Installed or Attached Tape Drive

Internal and External Tape Drives

The HP SureStore HD Server 4000 provides a backup and restore facility for tape drives installed in the server (internal drive) and/or attached to its SCSI connector (external drives). See chapter 8 for the drives available and for installation instructions. One model of HD Server, product number HP 3291A, has an HP DAT 40i internal DDS-4 tape drive already installed.

Capacity Each DAT or DLT tape drive has a nominal capacity that assumes an estimate of a 2-to-1 compression ratio.

> For example, the HP DAT40i has a native capacity of 20 GB. If the compression of the files you back up on it is actually 2:1, then 40 GB will fit. Actual compression will vary.

Since each backup on the HD server can use only one tape, you may not be able to back up the entire file system at a single time. (You can schedule up to eight different backups, each comprising a portion of the file system.)

> For example, if your server uses six 9-GB disk drives, with the sixth drive as a spare, the storage capacity of your RAID volume is approximately 4 times 9 GB, or 36 GB (since RAID 5 uses the equivalent of one drive for redundancy). A file system that fills all capacity on the server *may* therefore fit on a single 40-GB tape *if* compression is used and reaches the 2:1 ratio.
>
> If you convert the spare to a sixth drive and fill it, then you must ensure that you have the tape capacity of 5 (6 drives minus 1 for RAID) times 9 GB, or 45 GB with enough compression, before you include the entire file system on one tape.

Reliability Frequent causes of restore failures are blank and damaged tapes. Another is that the desired file cannot be found on the tape. Some preventions are the following:

- Correct handling of the tape on insertion and ejection.
  Never use force in inserting cartridges. Place it squarely in the slot and push it gently in the middle until the mechanism pulls in the cartridge.
- Correct storage of the tape.
  Heat, condensation, dust, and magnetic fields damage data cartridges. Put cartridges in their protective cases when removed from drive. Store away from heat, dust, and magnetic sources. Do not pile a tape label upon another label.
- Useful life of the tape.
  Consult the documentation for the tape to understand the tape's useful life. Count usages by repositions of the drive mechanism on the tape. Consider the humidity as well as the temperature of your storage environment.

- Cleaning of tape heads.
  See “Maintaining Tape Drives” on page 9-3.
- Labeling and rotation of the tapes.
  Use a tape handling routine that is easy to follow. Use a tape labeling routine that assures you can find the correct tape for a particular day and for the files needed. Use a tape rotation strategy that provides for several generations of files and server configuration backups, and for periodic off-site storage.

Maintaining Tape Drives

Tape drives must be cleaned regularly with a cleaning cartridge to maintain the integrity of your backup data. If you installed the HP SureStore tape drive, clean them as advised in the “Cleaning” section in the electronic *User’s Guide* on the *HP SureStore Tape CD-ROM* that accompanies your HP tape drive. If your HP SureStore DAT drive was preinstalled, use the instructions in this section.

Recommended Cleaning Frequency

Number of DDS Cartridges Used Each Day			
1	2	3	4+
Every 8 weeks	Every 4 weeks	Every 3 weeks	Weekly

CAUTION! ❑ You should also clean the tape heads if the media caution signal (flashing amber **Clean** light) is displayed on the tape drive.

Cleaning Cartridges

CAUTION! ❑ Use only an HP cleaning cartridge to clean the tape heads. Do ***not*** use swabs or other means of cleaning the heads.

The cleaning cartridge uses a special tape to clean the tape heads. A cleaning cartridge can only be used 50 times or as instructed on the cartridge packaging. When the cartridge runs out of tape, discard it and use a new one.

Cleaning Procedure

1. Insert a cleaning cartridge into the tape drive. The drive automatically loads the cartridge and cleans the heads.

   The cartridge ejects at the end of the cleaning cycle, approximately 30 to 60 seconds. If the cartridge ejects in less than 20 seconds, it has probably expired. In this case discard it and repeat this step with a new cartridge.

2. Remove the cleaning cartridge from the tape drive and mark it with the number of times it has now been used.

Discard it after you have used it 50 times, or as instructed on the packaging.

Specifying and Scheduling a Backup

Use a web browser at a network workstation to start HD Server Admin. See page 4-1 to page 4-4.

Click the **Backup/Restore** tab. To access the appropriate backup page, select a button from the row across the top as follows. (The **Backup** button is initially selected.)

- To specify a backup to be done once and immediately, click the **Backup** button to access the **Backup/Restore → Backup** page.
- To specify a backup to be scheduled for a future time, whether once or every week, click the **Schedule** button, to access the **Backup/Restore → Schedule** page. Select a schedule entry and click the **Edit** button to access the **Schedule Entry** page.

Specify What to Back Up

You can specify the entire volume or a portion of the file structure for a backup tape. Since each backup uses exactly one tape, how much of the file system can be included depends on the capacity of the tape and the file space used by the files. (See "Capacity" on page 9-2.) You may need to break up the file system into multiple backup specifications. For each one:

1. On the file system display, you will see the **c** volume, which contains all directories for your shares and a directory for the system files. Select **c** to open it to browse those directories. Use the Up button to navigate "up" the file hierarchy; select a directory to browse "down".

   (Above the **c** volume is shown the server name. Since **c** is the only volume, specifying the server is the same as specifying **c**.)

2. Specify one or more directories for backup by filling the checkboxes.

   - Specifying a directory specifies all files and directories within it.
   - You may specify a combination of individual files and directories, contained within the current directory.
   - Files are stored relative to their parent directory. The path of the parent of the selected files or directories is not stored.

Note: One Tape Only

- You cannot change tapes during a backup of this server, so you must specify a set of files that will fit on one tape. Your file system may be too large to fit on a single tape. See “Capacity” on page 9-2 for further information. Use backup schedules to back up different file sets at different times.

  See also “Making a Disaster Recovery Backup Tape” on page 9-7 for an additional backup recommendation, which may or may not fit on the same tape.

Specify Options

On the **Backup** page or **Schedule Entry** page (see page 9-4), click the **Edit Options** button to access the **Backup Options** page.

Drive Select

The HD Server 4000 may have up to two tape drives attached. One can be internally installed and one can be externally attached to the SCSI connector at the rear of the server. The default selection is “**Drive 1**”.

For the option **Drive Select**, select **Drive 1** or **Drive 2. Drive 1** selects the tape drive with SCSI ID 3 (the internal drive as recommended for installation), and **Drive 2** selects the tape drive with SCSI ID 5 (the external drive as recommended for installation).

See chapter 8 for installing internal and external tape drives.

Tape Catalog

Check this box to make a listing of the files as they are backed up on the tape. Specify a disk file to store this listing. It can help in documenting your backup tapes. (You may also create a tape catalog by reading the tape afterward, by using “Tape Catalog” under the Utilities button.)

It is recommended that you create a structure and naming convention for catalog files, especially for off-site storage.

Compatibility Mode

If you will need to restore this server's tapes to servers other than an HP SureStore HD Server 4000, and the utilities can restore the "ustar" or "pax" format, then select **Compatibility Mode**.

Tapes made either in compatibility mode or in the default with the mode disabled, can be restored in an HP SureStore HD Server 4000. Tapes written with the mode disabled preserve ownership and Windows FAT attributes. Tapes written in compatibility mode preserve ownership but not Windows FAT attributes.

Note:

- ❏ The archive bit is not changed for files backed up on a tape attached to this server.

Enable Compression

For **Compression**, normally use the default compression, which is assumed to be in effect for the nominal capacity of tape drives (such as 40 GB for HP DAT40). Disable compression *only if* you will need to restore this server's tapes on a different drive that is *not compatible* with the hardware compression used on the HP DAT and DLT tape drives.

Reset Log

Resetting the log using **Reset Log** keeps the backup/restore log from getting too large, by reinitializing it when the new backup is performed.

Backup Now

To make an immediate one-time backup, use the **Backup/Restore → Backup** page. Specify the files to back up (described above on page 9-4), and specify any option changes (described above on page 9-5).

Insert a properly labeled, write-enabled tape in the selected tape drive.

Click the **Start Backup** button. This uses the selections made on this page.

Note

- ❏ The tape will rewind before and after recording. It will be unloaded if **Unload/Eject Tape on Completion** is specified on the **Backup Options** page. Unloading prevents the next backup from recording over this one. (Note that on HP DLT drives, the tape *will not be ejected* when unloaded, merely made inaccessible for further recording until manually reloaded.)

Schedule Backups

You can schedule up to eight different backups, each comprising a portion of the file system or the entire file system. Use the **Backup/Restore → Schedule** page.

Each entry in the backup schedule consists of the file set to back up, the backup options, and the day and time to perform the backup.

Select a schedule entry to add or edit, and click the **Edit** button.

In the schedule, specify the day of the week and the time for the backup. If the **Once Only** checkbox is unfilled, the backup will be run every week on the day and time specified.

Use the file system display to specify files to back up, as described in "Specify What to Back Up" on page 9-4. Specify any option changes, as described in "Specify Options" on page 9-5.

Click the **OK** button to schedule the entry as specified on this page.

Note

- Ensure that a properly labeled, write-enabled tape will be inserted in the selected drive at the scheduled time. Ensure that the tape is unloaded after recording by manually unloading it or by specifying **Unload/Eject Tape on Completion** on the **Backup Options** page; otherwise, the next backup will be recorded over the earlier one. (Note that on HP DLT drives, the tape *will not be ejected* when unloaded, merely made inaccessible for further recording until manually reloaded.)

Making a Disaster Recovery Backup Tape

HP recommends that you plan for the recovery of both the file system and the configuration on the server. The loss of the RAID volume will result in the loss of configuration information stored on the volume in addition to the file data. This configuration information includes shares, users, groups, passwords, and backup schedules. These files are stored on the volume in the `c/system/config/` directory. You can back up these files up in the same way you back up your data files. (You can include them on the same backups with data files, as long as earlier versions of these data files will not end up on other backup tapes needed for full restoral.)

To back up the above files, you should make a disaster recovery tape or tapes that include the `c/system/config/` directory, as well as the parent directory structure of the data file sets that are essential to your operations. To include the backup and event logs, back up the `c/system/` directory instead of `c/system/config/`.

Saving Network Configuration

Before you make that backup, however, you should store the current server and network configuration information into the `c/system/config/` directory, so that it too will be included in the backup. The server and network configuration information is stored in Flash memory on the server module. To copy it to the volume, use the **Configuration → Save/Restore Configuration → Save Configuration** page. Then make the disaster recovery tape(s). Repeat those two steps every time you change any configuration using the control panel, the installation wizard, or HD Server Admin.

Summary

Every time you install a server or change its configuration:

1. Save the server/network configuration using **Configuration → Save/Restore Configuration → Save Configuration** page.
2. Make a disaster recovery backup that includes:
   - `c/system/config/` directory (or `c/system/` to include logs)
   - Parent directory structure of the directories and files essential to your operations
3. Record it as a configuration restore tape(s) and label the date.

Recovering from Disaster

To use your disaster recovery tape(s) to restore the hardware and file system from major loss—that includes failure of multiple disk drives and possibly other components of the server—see chapter 11, “Resolving Problems with Your Server”.

Restoring Files

Use a browser at a network workstation to start up HD Server Admin. (See page 4-1 to page 4-4.) Click the **Backup/Restore** tab. Click the **Restore** button to access the **Restore** page. To access the appropriate backup page, select a button from the row across the top as follows. (The **Backup** button is initially selected.)

Specify What to Restore

To restore all the files on the backup tape, select **Full Restore**.

Or you can specify specific directories or files to be restored from the tape. Click **Selective Restore** and click the **Edit File List** button to reach the **Restore File Select** page. Specifying a directory includes all the files within it. Specify multiple files and directories only if you want all to be restored to the same destination directory.

If you do not know the exact path and file or directory name on the tape to specify on this page, use a tape catalog listing to find it. To make a tape catalog, use the **Backup/Restore → Utilities** page (click the **Utilities** button under the **Backup/Restore** tab). Create a tape catalog by specifying a file name for storing it on the disk and clicking the **Create** button. (You can use **Browse** to find a path.) In the catalog file, find the file/directory to restore. Copy its full path specification (using the "copy and paste" facility). Then return to the **Restore File Select** page, and paste the specification into the **Selected File** area.

Enter the path specification of all directories and files to restore to that destination. Click **OK** to return to the **Restore** page.

Specify Destination

Specify the destination path on the server's volume, for all the files from full or selective restore set. This is the new parent directory for the file set. Use **Browse** to find a path. You have two choices:

- Specify the path that was used as the parent directory for the backup, to restore the files to the same location from which they were backed up. The files will be in the same location for further use. However, the files will overwrite any of the same names (possibly modified later), except for those locked.
- Specify a path different from the one used as the parent directory for the backup—possibly an empty directory—so that the restore builds a directory structure beneath the destination that is the same as the one backed up. This avoids overwriting files on the disk. Returning the files to the desired location must then be done.

Note

- ❑ Restoring `/system/` on the root will overwrite existing configuration information.

Specify Options

On the **Restore** page, click the **Edit Options** button to access the **Restore Options** page.

Drive Select

The default selection is "**Drive 1**".

For the option **Drive Select**, select **Drive 1** or **Drive 2. Drive 1** selects the tape drive with SCSI ID 3 (the internal drive as recommended for installation), and **Drive 2** selects the tape drive with SCSI ID 5 (the external drive as recommended for installation). See chapter 8 for installing internal and external tape drives.

Reset Log

Resetting the log keeps the backup/restore log from getting too large, by reinitializing it before the restore is performed.

Start Restore

Insert the tape containing the data to be restored into the tape drive selected.

Click the **Start Restore** button, to use the selections on this page.

Recovering the File System

In case of disaster befalling your file system, such as accidental deletion of the entire volume, or simultaneous failure of two or more disk drives, and possibly loss of multiple hardware components, you may need to do more than restore all of the files from tape to the server as described above.

The entire disaster recovery process is described in chapter 11, "Resolving Problems with Your Server". To prepare for disaster now, note some of the additional requirements in particular cases:

- Recreating the volume.
- Restoring the directories that are parents of the shares and the backup file sets.
- Restoring the server, shares, users, groups, passwords, and backup schedules that are stored in files on the volume.
- Restoring the server and network configuration to the volume, and then using the **Configuration → Save/Restore Configuration → Restore Configuration** page to restore it to Flash memory on the server.

To prepare for such disaster recovery, perform the procedure in "Making a Disaster Recovery Backup Tape" on page 9-7.

Tape Utilities

Use a browser at a network workstation to start HD Server Admin. See page 4-1 to page 4-4. Click the **Backup/Restore** tab. Click the **Utilities** button under the tabs to access the **Tape Utilities** page. (The **Backup** button is initially selected.)

Select Tape Drive

Under **Options** select the tape drive for operations on this Tape Utilities page. **Drive 1** selects the tape drive with SCSI ID 3 (the default drive selection, usually the internal drive), and **Drive 2** selects the tape drive with SCSI ID 5 (usually the external drive). See chapter 8 for installing internal and external tape drives.

Erase Tape

Quick Erase is used before recording new data at the front of the installed tape, but does not fully destroy the existing data. **Full Erase** destroys all data, and may take two or more hours.

Create Tape Catalog

You can use **Create Tape Catalog** to read the installed backup tape to make a listing of its directories and files in a text file on the volume. Specify a disk file, and click the **Create** button. The catalog is used to verify file locations and to cut and paste paths for restoring. It effectively quick erases the tape as well.

Test Tape

Test Tape stores a small amount of data on the installed tape, reads the data and compares it, and displays results in a pop-up window.

Unload/Eject Tape

Using **Unload/Eject Tape**, the tape is rewound if necessary and unloaded. Unloading prevents the next backup from recording over this one. (Note that on HP DLT drives, the tape *will not be ejected* when unloaded, merely made inaccessible for further recording until manually reloaded.)

Backup/Restore Log

Use a browser at a network workstation to start HD Server Admin. (See page 4-1 to page 4-4.) Click the **Backup/Restore** tab. Click the **Log** button under the tabs to access the **Backup/Restore Log** page. This page displays the contents of the log stored in the `c/system/logs/` directory on the volume. It accumulates a list of backup and restore events.

To erase all events in the log file and restart accumulating events:

- Use the **Clear Log** button on this page, or
- Mark the **Reset Log** checkbox on **Options** pages (from **Backup, Restore,** and **Schedule Entry** pages (see page 9-6 and page 9-10)).

Updating the Firmware

When firmware upgrades are available, the image stored in Flash memory on the server can be easily updated over the network. In addition to the image currently being used, an alternate image of the firmware is also available on the server, in case an update fails in process.

Checking Current Image

You can view the current version of the product code on the control panel of the HD Server. While the server is operating, enter view mode by pressing the ✔ button on the control panel. Then press ▼ (down button) several times to cycle through the parameters until `Firmware Ver.` is displayed. When finished viewing, press the ✘ button and confirm with the ✔ button to exit.

You can also view your current version of the firmware using HD Server Admin on a workstation on the network (see page 4-3)—on the **Identity** and **Status** web pages.

Both the current image and alternate image on the server are also shown on the **Configuration → Firmware Update** page. (Select the **Configuration** tab and click the **Firmware Update** button under it.)

Checking for an Update

Contact your HP-authorized dealer for the most recent release of firmware.

You can check (and download from) the HP web site for support. You can access that site using a link on the **Support** page in HD Server Admin (see page 4-3). The URL is:

```
http://www.hp.com/support/hdserver
```

Or, you can contact your nearest HP Customer Care Center (see page A-1).

Downloading an Update

When an updated version of the HP SureStore HD Server 4000 firmware is available on the HP web site, copy the image file to a directory on the HD Server.

Updating the Server

You must update the image on the server's Flash memory from the file you downloaded to the directory on the server. Use a web browser at a computer on the network to start HD Server Admin. (See page 4-1 to page 4-4.) Click the **Configuration** tab. Click the **Firmware Update** button below the tab.

The **Firmware Update** page displays the **Current Firmware Version** and the **Alternate Firmware Version** images stored in the server's Flash memory. The server is preconfigured with two copies of the same version.

Note

- ❏ If you possibly have switched to the backup "alternate" version of firmware, verify that the version you have downloaded (per "Downloading an Update" above) is newer than either version.
- ❏ The version that this procedure installs will replace the **Alternate Firmware Version**. Verify that it is the one to discard.
- ❏ Normally, switch images only if an update fails or if the server does not boot properly after an upgrade.

  If the alternate version is the same version number as your update and you need to switch to it, see "Switching to the Backup Image" on page 10-3.

To update from the disk file to the server's Flash memory, enter the disk image filename on the **Firmware Update** page. You can use the **Browse** button to find it.

Click the **Update** button. This will replace the alternate firmware version with the selected new version, and then will set the new version to be used at the next restart of the server.

You must shutdown and restart the server to use the new image you selected. The new one will then become the current version and the previously current one will be the alternate, as a backup.

Switching to the Backup Image

The server's Flash memory stores two images of firmware. And once it has been updated with a new firmware image (as described in "Updating the Server" above), the versions may be different. In case of failure during an update, you can back up to an older version. It is also possible to toggle between the two images thereafter.

This procedure simply makes the current firmware version the alternate one, and makes the alternate one the current one, with which the server then restarts.

1. Shut down the server. It is easiest to use the control panel as follows: Press ✔ twice. Use the ▲ or ▼ button to scroll to the `Shutdown Server` parameter. Press ✔ and confirm with ✔ again. The server will halt and display on the control panel:

   ```
   Power off or
   ✔ to restart
   ```

2. Press (and release) the ✔ button to restart. Then immediately press the ▲ button and hold until the control panel displays `Entering Boot Mode`. When you release the ▲ button, the following will be displayed. Note the scroll symbol ⬍ in the first line of the display.

   ```
   Boot selection      ⬍
   =x.n.n
   ```

3. Press ✔ to select this parameter. The character following the = sign on the second line is blinking, showing it as the current selection, and the scroll symbol ⬍ is in the second line of the display. The = sign will appear in front of the current setting as you scroll among the choices. When the alternative image is displayed (without the = sign), press the ✔ button to select it. The scroll symbol ⬍ returns to the first line of the display.

4. Press ✘ to reach the Exit parameter:

   ```
   Exit Boot Mode?     ⬍
   ✔ = Yes, ✘ = No
   ```

5. Press ✔ and confirm with ✔ again, to load the selected version as the server's running firmware image. The server restarts.

Note ❑ This operation has an effect on subsequent update operations:

A firmware update (described in "Updating the Server" on page 10-2) will replace the new alternate image.

After updating and then reverting to the alternative image, you may see on the **Firmware Update** page the following example:

Current Firmware Version: A.00.00
Alternate Firmware Version: A.01.01

After updating to A.02.01, for example, and restarting, you would see on the **Software Update** page the following:

Current Firmware Version: A.02.01
Alternate Firmware Version: A.00.00

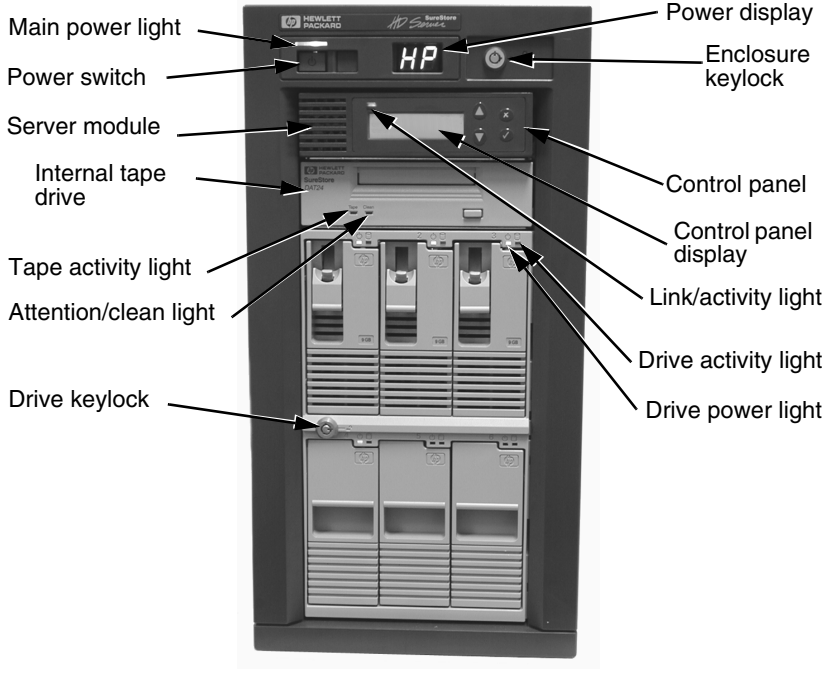
Your new update would therefore replace the previous (backup) version A.01.01, because you had switched to the backup image.

Resolving Problems with Your Server

Check Indicators

Normal Indications

Front View of HD Server



Light (LED)	Condition
Main power	On
Power display	HP
Drive power	Flash red, then green at startup; then solid green.
Drive activity	Green at startup; blinking for data read or write.
Link/activity	Green when network link is established. Blinking for each packet transmitted or received.
Tape activity	Green, then flashing green at startup. Solid green for cartridge loaded. Flashing green for load, unload, read, or write.
Attention/clean	Amber, then Off.

The control panel display alternates among the following:

Control Panel Display	Notes
HPHDSERV345ABC Tue Jun 1 14:59	**Server Name** setting. **Date** and **Time** setting.
HPHDSERV345ABC no alerts	If you see Check alerts instead, go to "Alerts on Control Panel" on page 11-7.
HPHDSERV345ABC 192.168.001.001	Not shown if a control panel password is set. **IP address** 000.000.000.000 is ***not*** normal (page 11-8).

The server is accessible over the network to client users using standard network file system protocols. The server can be administered using the embedded HD Server Admin (with a web browser). For network setup and administration refer to chapter 4. For client access see chapter 5, "Setting Up Client Access".

If your server does not operate as described above, see the next "Abnormal Indications" section or "Problem Lookup" on page 11-7.

Abnormal Indications

Server Power Light Error Displays

Main Power	Power Display	Problems
Off	Off	No power to server: Problem with both power sources, both power cords, both power supplies, both power supply fans, or the main fan. Check cords and sources. For supplies and fans, call HP support per appendix A, “Getting Support”.
On	HP	None (normal)
On	PF	Power fault: If left dot is flashing, top power supply is faulty. If right dot is flashing, bottom power supply is faulty. Call HP support per appendix A, “Getting Support”.
On	LF	Line fault: If left dot is flashing, check top power cord and source. If right dot is flashing, check bottom power cord and source.
On	FF	Fan fault: Immediately shut down server and switch power off (see page 11-17). Call HP support per appendix A, “Getting Support”.

Activity Light Error Displays

Link/ Activity	Drive Activity	Problems
Off	—	Network problem. See “Network Failures” on page 11-11.
—	Off at startup	Drive fails to spin up. See “Drive Fails to Spin Up” on page 11-12.
—	Solid on after startup	Fault: call HP support per appendix A, “Getting Support”.

Drive Power Light Error Displays

Drive Power	Problems
Flashing yellow on single drive	Power problem for that drive. Try replacing that drive with another. Call HP support per appendix A, “Getting Support”.
Flashing yellow on all drives	Possibly excessive temperature. Immediately shut down server and switch power off (instructions on page 11-17). See “Excessive Drive Temperature” on page 11-12 for troubleshooting.
Flashing red on all drives	Excessive temperature. Immediately shut down server and switch power off (instructions on page 11-17). See “Excessive Drive Temperature” on page 11-12 for troubleshooting.
Off	Drive fails to spin up. See “Drive Fails to Spin Up” on page 11-12.

HP DAT Drive Light Error Displays

Attention/ clean	Problems
Flashing amber	Media caution: too many correctable errors. Either the tape is near end of life, or tape heads need cleaning.
Solid amber	Fault: Call HP support per appendix A, “Getting Support”.

“Check Alerts” on Control Panel Display

See “Alerts on Control Panel” on page 11-7.

Check Status in HD Server Admin

You can get detailed status of your hardware and file system by using HD Server Admin (see page 4-3 to 4-4). Use the **Help** button, where available, for full interpretation of any error data displayed.

Status → Summary page

Click on each module on the server graphic: the disk drive modules, the tape module, and the server module (click on the display panel to select the server module).

If a module is displayed in a (red) fault condition, then that module is faulty and must be replaced according to instructions in the section "Resolution and Repair Procedures" on page 11-17.

Configuration → Disk Setup page

Click on each slot for drive status. Click on **Volume C** for volume status.

- If the status of the volume is **"Warning"** (yellow) and a drive slot other than the hot spare is **"Failed"** (red), then file service will be slow and will no longer provide any redundancy (further failure protection). Replace the drive as soon as possible. Call HP support per appendix A, "Getting Support" for a replacement part. To replace it, see "Replace Disk Drive Module" on page 11-23. After replacing the drive, return to the **Configuration → Disk Setup** page and **Expand Volume** to add the drive (see page 4-8).
- If the status of the volume is **"Failed"** (red) then files are not accessible. Replace all drives whose status is **"Failed"** (red). For recovery, use the first procedure in the section "Disaster: Lost or Damaged File System" on page 11-13.
- If the status of the volume is **"OK"** (green), but the spare is **"Failed"** (red), file service is not affected. However, if another drive should fail, the server will be unable to automatically replace the failed drive with the spare. Replace the spare drive as soon as possible, as described in the preceding paragraph.
- If the status of the volume is **"OK"** (green) and a drive slot is **"Warning"** (yellow) , then a problem is detected in the drive (such as parity errors). The drive remains in use but could fail. It should be replaced as soon as convenient.

Check File System

In the **Volume C** view on the **Configuration → Disk Setup** page (see previous section on page 11-5), check the file system for errors by clicking the volume and the **Check Volume** button. Users will be disconnected while the file system check is performed; it takes up to 20 seconds.

If the check succeeds, then the volume is OK.

If the check fails, then:

1. Delete and create the volume.
2. Restore the data from backup tape or another source.

Status → Event Log page

The events listed in the event log may help you track problems.

Problem Lookup

Lights (LEDs) Not Normal

See the problems listed in the section “Abnormal Indications” on page 11-3.

Alerts on Control Panel

If the control panel displays the following notice of alerts:

```
HPHDSERV345ABC
Check alerts
```

Press ✔ to access the Alerts Viewer (in view mode).

```
Alerts Viewer  ▲▼
Press ✔ to view
```

Press ✔ to view the first alert.

```
alert 1 of 1   ▲▼
Recovered from ab
```

The message scrolls horizontally and repeats. When you are done reading the alert, press ▼. If there is another alert, it is scrolled in the same way. When you are done reading all alerts, press ✔.

```
✔ again to clear
Recovered from ab
```

Press ✔ to clear each alert one at a time. The display alternates between the following two displays:

```
All Alerts have
been cleared
```

```
Alerts Viewer  ▲▼
(no Alerts)
```

Press ✘ to exit view mode.

```
Exit View Mode ?
✔ = Yes, ✘ = No
```

Press ✔ to confirm the exit.

Other Unexpected Messages on Control Panel

- `Press ✔ to use DHCP/BOOTP or`
  `Press ✘ to set IP manually`

  This control panel display is normal when starting up the server for the first time (or following `Reset Defaults`). Respond as described in step 5 on page 2-9.

- `Gateway, Subnet or IP invalid`

  Either the IP address currently set is illegal (000.000.000.000) or there is an inconsistency between the IP address, subnet mask, or gateway settings. Respond as described in the "Note" below step 10 on page 2-11.

- `FAIL` Appearing in Message or
  Unchanging or Frozen Message

  Try a power cycle (see page 11-18). If the same error occurs, the server module has failed. Call HP support per appendix A, "Getting Support" for a replacement part. To replace it, see "Replace the Server Module" on page 11-31.

- `FAULT` Appearing in Message
  `Press ✔ to restart`

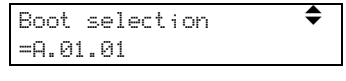
  Press ✔ to restart the server. If that does not work and `FAULT` appears again, then try the alternate firmware image: Begin with step 2 of the procedure "Switching to the Backup Image" on page 10-3.

  If that does not work and `FAULT` appears again, then the server module has failed. Call HP support per appendix A, "Getting Support" for a replacement part. To replace it, see "Replace the Server Module" on page 11-31.

- `BAD FW IMAGE`
  `TRY ALTERNATE`

  Power off and start up the server with the alternative firmware image. (The alternative version is stored in Flash memory. Once you have updated the firmware version, the alternate is the previous version.) The procedure is the following.

  First, switch power off. Wait at least 10 seconds for the disk drives to stop spinning. Switch power on, and immediately press the ▲ button and hold until the control panel displays `Entering Boot Mode`. When you release the ▲ button, the following will be displayed. Then begin with step 3 of the procedure "Switching to the Backup Image" on page 10-3.

Failure/Warning Status in HD Server Admin

If you see a status of **"Failure"** or **"Warning"** on a **Status** page or **Disk Setup** page in HD Server Admin, then go to page 11-5. The problems and solutions are described in the section "Check Status in HD Server Admin".

Writing/Reading Data Fails

1. In HD Server Admin (use a workstation on the network and see page 4-3 to 4-4), go to the **Status → Summary** page. If any disks show an error condition, then skip to step 3.
2. In HD Server Admin, go to the **Status → Event Log** page and check for volume error messages.
3. At the server, check the Drive power and Drive activity lights. Compare them to the tables on page 11-2 and page 11-4.
4. Check the control panel display for alerts. Follow the instructions in "Alerts on Control Panel" on page 11-7.
5. If the above show no problems, restart the server. See "Restart" on page 11-18.
6. If the read or write fails again, then in HD Server Admin go to the **Configuration → Disk Setup** page, click the volume, and click the **Check Volume** button. Refer to "Check File System" on page 11-6.
7. Shut down the server (page 11-17) and make sure all drives are properly seated. Restart the server (page 11-18).
8. If the read or write fails again, then a drive may have failed. Call HP support per appendix A "Getting Support" for a replacement part. To replace it, see "Replace Disk Drive Module" on page 11-23.

Server Not Appearing in Network Neighborhood

1. Verify that other configured users can access the server. If they are unable to access it, go to the section "Network Failures" on page 11-11.
2. Verify that the user who cannot see the HD Server is able to see other devices that are on the same subnet as the HD Server.
3. Verify that the HD server can be reached using a **`ping`** command at a DOS prompt on the user's computer. If it fails, then check the subnets and gateways configured on the user's computer and on the HD server.
4. Try Windows' Find Computer function, using the server name of the HD Server.

   The default server name is "HPHDSERV*hhhhhh*" where "*hhhhhh*" are the last six digits of the server's MAC address. The server name may have been changed using the installation wizard or HD Server Admin.

   If you are using WINS or DNS, verify that server is configured and the HD Server's server name and IP address are correctly entered into the database.

Administrator Web Access Fails

If you can't access HD Server Admin:

1. Verify the network cabling and connections to the HD Server.
2. Verify the entry for the URL:

   If you used the server name in the URL, then try it with the IP address instead. Verify that the IP address used in the URL is the same one configured on the server and displayed on the control panel (except for any leading zeroes).
3. Try to reach the HD server using a **`ping`** command at a DOS prompt on the administrator workstation. If you cannot reach it, then check the network configuration for the workstation and the web browser. Make sure that a valid default gateway is set.
4. Try disabling proxies to get access.
5. Also check the "Network Failures" on page 11-11.

Network Failures

1. Verify the network cabling and connections to the HD Server.
2. Try to reach the HD server using a **`ping`** command at a DOS prompt on a network workstation. If you cannot reach it, then check the network configuration for the workstation and the web browser. Make sure that a valid default gateway is set. Then try **`ping`** again.

   If this fails, then verify that the server's IP address and subnet mask and default gateway are legitimate for the subnet used. Do this at the control panel of the server. Press ✔ twice. (Instructions for supplying the password if needed are found on page 3-3.) Use ▼ to scroll to the `IP Address` parameter. Refer to chapter 3 for details on using the panel's view mode (and setup mode if changes are needed).
3. Also on the control panel in view mode, verify that the `Link Speed` parameter shows a setting established, *not* "`No link`". If it says "`No link`", then verify the network connections to the hub or switch.

   Note for switch connections: Verify that the physical-layer configuration of the switch port (that is, auto-negotiation, duplex setting, and speed) matches the setting for `Link Speed` on the server.)
4. Check for alerts and check the event log for problems. (See "Alerts on Control Panel" on page 11-7. See the **Status → Event Log** page instructions beneath "Failure/Warning Status in HD Server Admin" on page 11-9.)

Access Denied when Map Drive Attempted

In HD Server Admin (use a workstation on the network and see page 4-3 to 4-4), go to the **Security → Microsoft Networking** page and check the **Security Model**.

- If it is **Share Level**, go to the **Configuration → File Shares** page and check that correct full-access or read-only password is being used.
- If it is **User Level**, go to thee **Configuration → Users & Groups** page and check the list of users. For that user, check the groups, permissions, and type of access. Use the **Help** button, where available, for assistance.

Access Security Fails

If you set up security for users (and optionally groups), and a user still has undesired access, go to HD Server Admin (use a workstation on the network and see page 4-3 to 4-4). On the **Security → Microsoft Networking** page, make sure that **Security Model** is set to **User Level**.

Drive Fails to Spin Up

1. Remove and reinstall all hard disk drive modules. Use the procedure “Replace Disk Drive Module” on page 11-23.
2. If the failure reoccurs, then replace the affected drive with another hard disk drive module.
3. If the failure reoccurs, then replace the enclosure and try again. For replacement, call HP support per appendix A, “Getting Support”.

Excessive Drive Temperature

Before you restart the server, check the following:

- Verify that the fan for the enclosure and the fans for the power supplies are operating.
- Verify that all slots without disk drive modules are covered with filler panels. If one cannot be found, order part:

  Hot-swap drive module slot cover 5063-8391

- Make sure that the enclosure side door is closed.
- Make sure that the rear air vents are at least six inches from any obstructions.
- Make sure that the ambient temperature does not exceed the range specified in “Operating Temperature” on page C-2.
- If all the above appear normal, then restart the server and verify that the Drive power light briefly flashes red. If it does not, the enclosure is faulty. Call HP support per appendix A, “Getting Support”.

Lost Administrator Password

The two types of optional passwords are the control panel password (see page 3-3 and page 2-11) and the web user interface administrator password (page 4-5). If either of the the passwords is set and then forgotten, you can do the following procedure, which removes both of them.

1. Do the procedure “Open the Enclosure” on page 11-25.
2. Push the red password reset button on the back of the server module so that it stays in the “in” position. The button is labeled in the illustration below step 4 on page 11-32.
3. Do the procedure “Close the Enclosure and Start Up” on page 11-27. The passwords are removed. Also, no password set while the button is in the “in” position will remain set.
4. Again do the procedure “Open the Enclosure” on page 11-25.

5. Push the red password reset button on the back of the server module so that it stays in the "out" position. This allows passwords to be set at the next startup.
6. Again do the procedure "Close the Enclosure and Start Up" on page 11-27. No password will be required.
7. Set the password(s) again.

Lost or Damaged Files

To restore lost files to an intact file system, restore them from tape or other sources. If you have a local tape drive, see "Restoring Files" on page 9-9 in chapter 9, "Backing Up and Restoring Files".

Disaster: Lost or Damaged File System

If you lose two or more hard disk drives or lose the file system in some other way, then you need to restore all of the following:

- The volume.
- All data files and directories, including any directory names that are parents of shares or of backup file sets.
- Shares, users, groups, passwords, and backup schedules, since they are stored in files on the volume.
- The server and network configuration files, since they are stored on the volume.

  If the server module needs replacement, then these configuration files are needed to restore the server's configuration to its Flash memory.

Go to the procedure "Disaster Recovery" on page 11-19.

Lost or Failed Server Configuration

- If the control panel prompts for an IP address (`Press ✔ to use DHCP/BOOTP or Press ✘ to set IP manually`), indicating that the configuraton is set to "first time" defaults, or you have just replaced your server module:

  a. Go ahead and set the three basic IP parameters, so that your server will be accessible on the network. Follow the instructions in step 5 on page 2-9 through step 12 on page 2-13.

  b. When you reach the **Installation Wizard** (step 12), your action depends on whether your "Disaster Recovery Backup" or other backup sets contain the `c/system/` or `c/system/config/` directory (the configuration files).

     - If the configuration files are backed up, you need not configure anything here. Instead, click **"Go straight to HD Server Admin"**. Restore that directory from backups to overwrite the default configuration directory. Then restore the server and network configuration to the Flash memory in the server using **Configuration → Save/Restore Configuration → Restore Configuration.**

     - If the configuration files are not available for restoral, then use the Installation Wizard and HD Server Admin to reconfigure your networking parameters, security model, shares, users and groups, and backup schedules.

  c. Restart your server and verify that your configuration is complete and current for your environment.

  d. Save the server and network configuration that is currently being used from Flash memory to be on the volume. Use **Configuration → Save/Restore Configuration → Save Configuration**. Back up the `c/system/` or `c/system/config/` directory again.

- If you have lost the backup copy of the server configuration stored on the volume (in the `c/system/config/` directory), while the configuration currently used on your server is OK.

  Save the server and network configuration that is currently being used from Flash memory to be on the volume. Use **Configuration → Save/Restore Configuration → Save Configuration**. Back up the `c/system/` or `c/system/config/` directory again.

- If you have just changed some of the networking configuration and find that you no longer have access to HD Server Admin to fix the configuration, you can do the following:

  a. Go into setup mode on the server's control panel and try setting the IP parameters again. (See "Setup Mode" on page 3-2 and the table of parameters on page 3-6.)

  b. If those changes are insufficient to get access to HD Server Admin, then you can reset all the default network settings and begin configuration all over again as if the server is being installed for the first time. Use the "Reset to "First Time" Defaults Procedure" on page 6-7.

Firmware Fails to Run

If during startup the control panel freezes on one of the following displays:

```
BAD FW IMAGE
TRY ALTERNATE
```

```
LOADING
FW Ver. A.01.01
```

Power off and start up the server with the alternative firmware image. (The alternative version is stored in Flash memory. Once you have updated the firmware version, this alternative is the previous version.) The procedure is the following.

First, switch power off. Wait at least 10 seconds for the disk drives to stop spinning. Switch power on, and immediately press the ▲ button and hold until the control panel displays `Entering Boot Mode`. When you release the ▲ button, the following will be displayed. Then begin with step 3 of the procedure "Switching to the Backup Image" on page 10-3.

```
Boot selection
=A.01.01
```

If the alternate image has the same failure, call HP support per appendix A, "Getting Support".

Backup Device Not Appearing in HD Server Admin

1. Check the lights on the drive.
   - For an internal DAT drive, compare them to the tables on page 11-2 and page 11-4.
   - For an external tape drive, compare them to the documentation for that drive.
2. Verify that you can load and eject a tape manually.

   If you cannot, then call HP support per appendix A "Getting Support" for a replacement.

CAUTION! Do not remove the tape cartridge by force, which would void your warranty. Your tape cartridge will be removed by the warranty service and sent back to you.

   To replace an HP DAT internal tape drive that was part of your server product, see "Replace the Tape Drive" on page 11-28.

3. Verify that the tape drive is connected in one of the following ways:
   - Externally attached to server's rear SCSI connector—HP DAT or DLT drives only. Make sure that the drive is properly terminated (see step 10 on page 8-9). If you change anything in this step, then restart the server (see "Restart" on page 11-18) so that the tape drive will be recognized.
   - Internally installed in the server—HP DAT drives only.

   Drives not connected in these ways cannot be set up using HD Server Admin. See page 8-10 and 9-1.
4. Verify that the SCSI ID of the tape drive is either 3 or 5. A drive with SCSI ID 3 will appear in HD Server Admin as "**Drive 1**". A drive with SCSI ID 5 will appear as "**Drive 2**". Drives with other SCSI IDs will not appear. (To access the rear of an internal drive, do the procedure "Open the Enclosure" on page 11-25.) If you change anything in this step, then restart the server (see "Restart" on page 11-18) so that the tape drive will be recognized.
5. If all above verifications show no problems, restart the server. See "Restart" on page 11-18. Try the drive again.
6. If the tape drive still fails to work, then it may have failed. Call HP support per appendix A "Getting Support" for a replacement. To replace an HP DAT internal tape drive that was part of your server product, see "Replace the Tape Drive" on page 11-28.

Shutdown

❑ Switching the server's power ***off*** without following the appropriate shutdown procedure can result in lost user data. Always make sure it is safe to cycle the power before doing so. Alert users that the server will be off line (inaccessible) while shut down; then complete the shutdown procedure before switching off power.

The shutdown procedure disconnects client sessions and halts server operation.

1. Notify users that the server will be off line and recommend they close all files.
2. You can use either (a) the control panel on the front of the server or (b) HD Server Admin using a web browser at another computer on the network.

   a. To get access to the control panel parameters, you can press ✔ twice. (Instructions for supplying the password if needed are found on page 3-3.)

      Use ▲ or ▼ to scroll to the `Shutdown Server` parameter. Press ✔ and confirm with ✔ again.

   b. Access HD Server Admin. (Instructions start on page 4-1. A username and password may be required.) Use the **Configuration → Shutdown/Restart** page. Click **Shutdown** and **Apply**.

3. The server halts and waits, with the following displayed on the control panel.

   ```
   Power off or
   ✔ to restart
   ```

   Next, you can either switch the power off, or restart the server.

Restart

Restarting interrupts client sessions briefly, reapplies the settings in the server configuration stored in Flash memory, and runs initialization self-tests. First notify users that the server will be off line and recommend they close all files.

You can use either (a) the control panel on the front of the server or (b) HD Server Admin using a web browser at another computer on the network.

a. At the control panel, first perform the shutdown procedure (step 2a above on page 11-17). At the following display on the control panel, press ✔ to restart.

```
Power off or
✔ to restart
```

b. Access HD Server Admin. (Instructions start on page 4-1. A username and password may be required.) Use the **Configuration → Shutdown/Restart** page. Click **Shutdown and Restart** and **Apply**.

After restarting, the server performs the initialization process, described starting at step 3 in "Startup Steps" on page 6-1.

Note ❑ From fault conditions that halt or freeze the server, it will automatically restart if the **Automatic Restart** parameter is enabled. If the parameter is disabled (as it is by default) or auto-restart has occurred three times, then the server merely shuts down.

Power Cycle

Use the power cycle procedure only when necessary to:

- Replace failed components.
- Move the server to another physical location or network location (that is, to connect a network cable).
- Restart the server when normal restart procedures (see page 11-18 above) have failed.
- When recommended as part of another procedure.

CAUTION! ❑ Switching the server's power ***off*** without following the appropriate shutdown procedure can result in lost user data. Always make sure it is safe to cycle the power before doing so. Alert users that the server will be off line (inaccessible) while shut down; then complete the shutdown procedure before switching off power.

The shutdown procedure disconnects client sessions and halts server operation.

1. Notify users that the server will be off line and recommend they close all files.
2. Perform a shutdown procedure as described above on page 11-17.
3. When prompted by the following display on the control panel:

   ```
   Power off or
   ✔ to restart
   ```

   Press the server's power switch to switch power off.
4. When ready to restart the server (at least 10 seconds later, so that the disk drives stop spinning), press the power switch to switch on power. The server performs the initialization process, described starting at step 3 in "Startup Steps" on page 6-1.

Reset Defaults

Use the "Reset to "First Time" Defaults Procedure" on page 6-7.

Download New Firmware

Use the instructions in chapter 10, "Updating the Firmware".

Disaster Recovery

File System Recovery. Use this first procedure when only drives and *not* the server module are being replaced:

1. Replace all damaged drives. (Call HP support per appendix A, "Getting Support" for replacement parts.) To replace drives, use the "Replace Disk Drive Module" procedure starting on page 11-23, through step 9 only.
2. Restart the server and use HD Server Admin (on a workstation on the network; see page 4-3 to 4-4). Go to the **Configuration → Disk Setup** page. Click on the **Create Volume** button. By default, all disk drives are selected. If you want to exclude any of the disk drives from the volume, deselect each one. If you have more than three selected, you are given the option of using one as the hot spare. Perform the requested confirmations.
3. Check your lists of backup sets for the components described below and for how to restore them. (For using a local tape drive, see "Restoring Files" starting on page 9-9).

   - Directories that are parents of the shares and the backup file sets:

     Check your backup sets to determine which directories will not be restored from backups. Create those directories on the server. Use the **Configuration → File Shares** (page 4-10).

- The `c/system/` or `c/system/config/` directory (the configuration files):

  Restore that directory from backups to overwrite the default directory (that was created by step 2 above). If that directory is not backed up, then configure your users, groups, passwords, shares, and backup schedules as described on pages 4-10, 4-11, and 9-7.

- Directories and files.

  Restore them from backup sets. If they are not backed up, users will need to recreate them.

4. Restart the server and verify that all configuration has been restored and updated.
5. Save the server and network configuration that is currently being used from Flash memory to be on the volume. Use **Configuration → Save/Restore Configuration → Save Configuration**. Back up the `c/system/` or `c/system/config/` directory again.

Multiple Disaster Recovery: Server Configuration and File System. Use this procedure if your server module needs replacement as well as your file system.

1. Replace all damaged drives. (Call HP support per appendix A, "Getting Support" for replacement parts.) To replace drives, use the "Replace Disk Drive Module" procedure starting on page 11-23, through step 9 only.
2. Replace the server module. (Call HP support per appendix A, "Getting Support" for replacement parts.) To replace the module, use the "Replace the Server Module" procedure starting on page 11-31, through step 15 only.

   - If you have used this server module at another network location, it may need its password reset. So instead of step 16 on page 11-34, push the red button at the near end of the server module so that it stays in the "in" position.
   - If the server module is fresh from the factory, check that the red button at the near end of the server module is in its most fully "out" position.

3. Refer to the procedure "Close the Enclosure and Start Up" on page 11-27 and perform steps 2 through 6.

4. Switch on power to the server. If the server module is fresh from the factory, skip to step 5 now. But if you have used this server module previously, you should prevent it from completing the initialization with the old configuration so that you can give it the new IP address, etc. Do the following to reset it.

   a. During initialization the control panel displays the following countdown from 10 to 0 seconds for entering setup mode.

   ```
   Press ✔ to enter
   Setup Mode: 10
   ```

   b. Press ✔ before the countdown of 10 seconds is completed. When prompted `Use ✔ to select`, press ✔ again. Use the ▼ button to scroll to the `Reset Defaults` parameter and press ✔. When prompted `Press ✔ to reset network settings`, press ✔. When prompted `Turn off and restart server`, press the power switch to switch power off.

   c. Again disconnect power and open the enclosure (page 11-25). Push the red password reset button on the back of the server module so that it stays in the "out" position. This allows passwords to be set later. Close the enclosure (page 11-27) and switch on power to the server.

5. Follow the initialization process starting at step 4 on page 2-8, as if installing a server for the first time.

   When you reach the **Installation Wizard** (step 12 on page 2-13), your action depends on whether you have your server configuration files on a backup—the `c/system/` or `c/system/config/` directory.

   - If the configuration files are backed up, you need not configure anything here. Instead, click **"Go straight to HD Server Admin"**.
   - If the configuration files are not available for restoring, then use the Installation Wizard and HD Server Admin to reconfigure your networking parameters and security model. Do not configure shares, users and groups, and backup schedules yet.

6. Use HD Server Admin (on a workstation on the network; see page 4-3 to 4-4). Go to the **Configuration → Disk Setup** page. Click on the **Create Volume** button. By default, all disk drives are selected. If you want to exclude any of the disk drives from the volume, deselect each one. If you have more than three selected, you are given the option of using one as the hot spare. Perform the requested confirmations.

7. Check your lists of backup sets for the components described below and for how to restore them. (For using a local tape drive, see “Restoring Files” starting on page 9-9). and restore all data and configuration files.

   - Directories that are parents of the shares and the backup file sets:

     Check your backup sets to determine which directories will not be restored from backups. Create those directories on the server. Use the **Configuration → File Shares** page as described on page 4-10.

   - The `c/system/` or `c/system/config/` directory (the configuration files):

     Restore that directory from backups to overwrite the same default directories.

     If that directory is not backed up, then configure your users, groups, passwords, shares, and backup schedules as described on pages 4-10, 4-11, and 9-7.

   - Directories and files.

     Restore them from backup sets. If they are not backed up, users will need to recreate them.

8. Restore the entire configuration to the Flash memory in the server. Use **Configuration → Save/Restore Configuration → Restore Configuration**.

9. Restart the server and verify that all configuration has been restored and updated.

10. Save the server and network configuration that is currently being used from Flash memory to be on the volume. Use **Configuration → Save/Restore Configuration → Save Configuration**. Back up the `c/system/` or `c/system/config/` directory again.

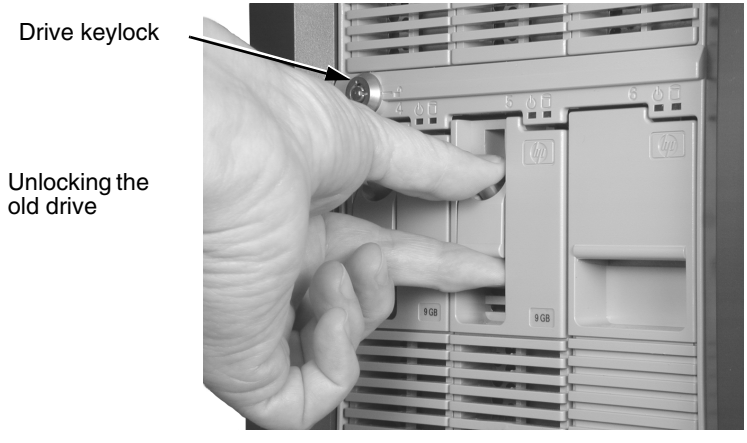
Replace Disk Drive Module

1. Notify users of the interruption in service while the server is shut down, and recommend that they close all files.
2. Shut down the server and leave the power on, using one of the following methods. (If the server is *not* powered on, skip this step.)
   - Use the control panel's view mode, as follows: Press ✔ twice. Use the ▲ or ▼ button to scroll to the `Shutdown Server` parameter. Press ✔ and confirm with ✔ again.
   - Use HD Server Admin's **Configuration** → **Shutdown/Restart** page. Click **Shutdown** and **Apply**.

   The server will halt and display on the control panel:

   ```
   Power off or
   ✔ to restart
   ```

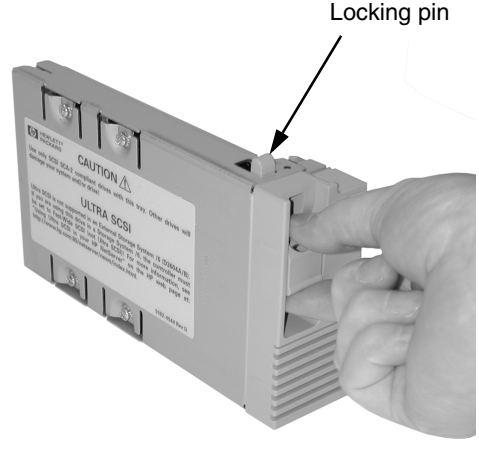
3. Unlock the drive keylock if necessary (see illustration below). The unlocked position is marked beside the keylock—pointing toward the right side of the server.



4. On the drive module, press the locking tab down while you pull the drive lever out and fully up. Pull out the drive by its drive lever.
5. Unpack the new disk drive module if necessary. Pull out the plastic shipping plug from between the drive lever and the locking tab.

6. On the new drive module, press the locking tab down while you pull the drive lever out and fully up. The locking pin on the top of the drive fully retracts to allow insertion into the slot.

Unlocking the new drive



7. Holding the module only by its plastic front bezel and the metal tray, slide the module slowly into the slot until it stops, at the end of the drive lever. The module remains extended about 5 mm or 0.2 inches from the adjacent surfaces in this position. See the illustration below.

With drive lever pulled out, sliding the module into slot until it stops

8. Press the drive lever down until it latches. The module fully engages, while the locking tab and pin snap into place. Both the front of the module and the drive lever are flush with the adjacent surfaces in this position.

Pushing down the drive lever to snap module into place

9. Lock the drive keylock if desired to prevent drive removal.
10. If the server is powered on and ready to restart, at the control panel press ✔ to restart.
11. Return to the **Configuration → Disk Setup** page in HD Server Admin.
    - If your volume is OK or degraded, use **Expand Volume** to add the drive to the volume (see page 4-8).
    - If your volume is failed, use **Create Volume** (see page 4-9). Then restore all the volumes's data from backups. (For using a local tape drive, see "Restoring Files" starting on page 9-9.)

Open the Enclosure

The enclosure must first be opened, according to the instructions in this section, to do some of the procedures listed below.

- Replace the internal tape drive (page 11-28)
- Replace the server module (page 11-31)
- Reset the passwords (page 11-12)

1. Assemble the following tools:
    - a flat-blade screwdriver to open the enclosure door
    - HD Server's enclosure key for opening the keylock
2. If the server is *not* powered on, skip to step 6.
3. Notify users of the interruption in service while the server is shut down. Recommend that users close all files.

4. Shut down the server, using one of the following methods.
   - Use the control panel's view mode, as follows: Press ✔ twice. Use the ▲ or ▼ button to scroll to the `Shutdown Server` parameter. Press ✔ and confirm with ✔ again.
   - Use HD Server Admin's **Configuration →** **Shutdown/Restart** page. Click **Shutdown** and **Apply**.
5. When you see the following display on the control panel, use the power switch to switch the server's power ***off***.

   ```
   Power off or
   ✔ to restart
   ```

6. Disconnect both power cords from the rear of the server.

CAUTION! ❑ Never open the side door of the enclosure when power cords are attached. You risk electrical shock even when the power is switched ***off***.

7. Use the server's key to unlock the enclosure keylock if necessary. (See illustration on page 11-1.)
8. Remove the front bezel from the server:

   Grasp the indentations at the sides near the top of the bezel. Pull the top forward, swinging it down to clear the retaining clips at the bottom of the enclosure. Lift the bezel away from the enclosure and set aside.

Removing the front bezel

9. Open the side door:

   Loosen the door mounting screws using a flat-blade screwdriver. The screws remain attached to the door. Swing the door open, away from the front of the server. (See the illustration below.) For the most working space, you may lift the door up and off the enclosure at the rear, and set it aside.

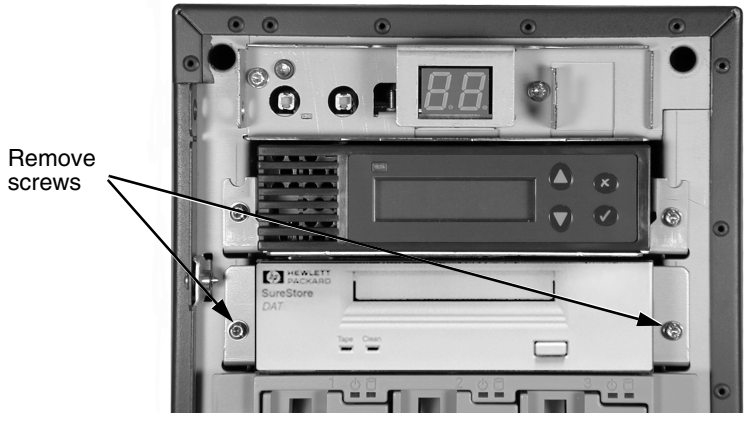
Opening the side door, once the front bezel has been removed

Close the Enclosure and Start Up

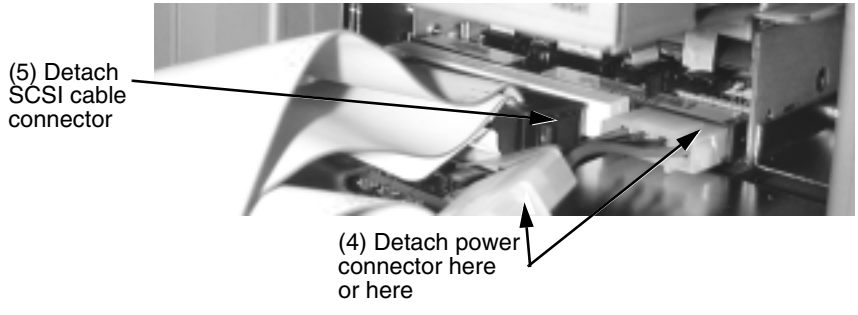
1. Assemble the following tools:
   - a flat-blade screwdriver to reattach the enclosure door
   - HD Server's enclosure key for locking the keylock
2. If the door has been removed from its hinges, then with the door parallel to the rear panel of the server, insert the three tabs into their slots on the outside rear edge.
3. Swing the door closed and click it into place. Secure the door by tightening the two captive screws.
4. Install the front bezel by attaching it at the bottom first, swinging it upward, and then snapping it onto the enclosure at the top. (See the illustration below step 8 on page 11-26.)
5. Lock the enclosure keylock if desired to prevent removing components inside the enclosure.
6. On the rear of the server, reattach the power cables.
7. On the front of the server, switch on power and verify normal operation (page 11-1). Notify users that file service has resumed.

Replace the Tape Drive

1. Assemble the following tools:
   - Torx® #15 driver or flat-blade screwdriver for filler panel
   - Flat-blade screwdriver for opening the enclosure
   - Torx® #10 driver for attaching drive mounting tray
   - HD Server's enclosure key for opening the keylock
2. Do the procedure "Open the Enclosure" on page 11-25.
3. Detach the old tape drive module at the front of the server (illustrated below), using the Torx® #15 or screwdriver to remove the two screws. Reserve them for attaching the new tape drive.



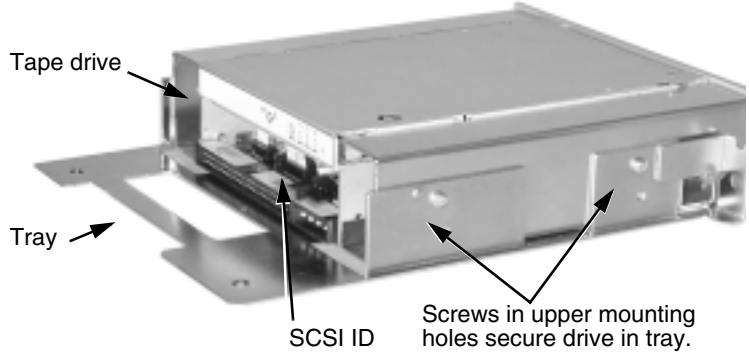
4. Inside the enclosure on the rear of the tape drive, the connection nearest you is the power cable connection (see illustration below). Detach the power connector from the tape drive.



If you find that a short power extension cable is attached to the enclosure's power cable (see illustration above), then you may find it easier to instead detach the extension from the enclosure's power cable.

5. The adjacent connection is the SCSI ribbon cable connection (see illustration above). Squeeze the levers at both ends of the connector to release it from the connector on the tape drive. (On a DAT24i drive, the connector will release from a 68-to-50-pin adapter.) The tape drive is now fully detached.

6. Push the tape drive module from the inside rear and, with your other hand, receive it from the front of the enclosure. The module consists of the tape drive mounted on a tray. Set the module down.



7. Unpack the new tape drive module and prepare it to be identical to the removed one in the following ways (see illustration above):

Note: SCSI ID

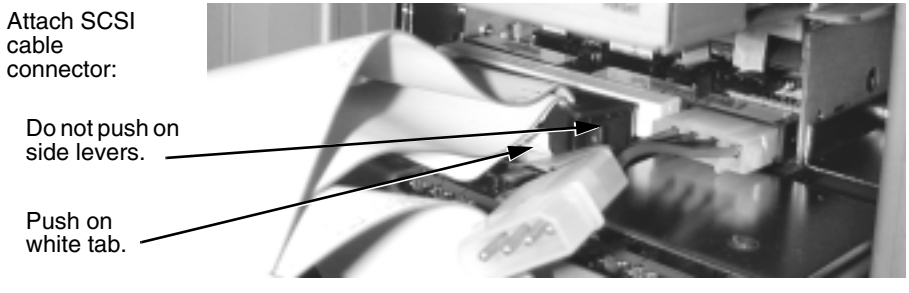
- Drive installed in the L-series mounting tray.
- Power extender cable attached or not attached (see step 4).
- For DAT24i, move the 68-to-50-pin adapter to the new one.
- Same SCSI ID set. (A drive with SCSI ID 3 is recognized as "Drive 1" for backup and restore functions. See chapter 9.)

8. Insert the new tape drive module (consisting of the tape drive in its tray) into the tape drive slot at the front of the server.

   The tray must fit between two sheet metal guides at both sides of the enclosure. If the tray does not slide easily, it may not be inside the guides. When the tray is fully inserted, its front holes align with the holes in the metal front of the enclosure.

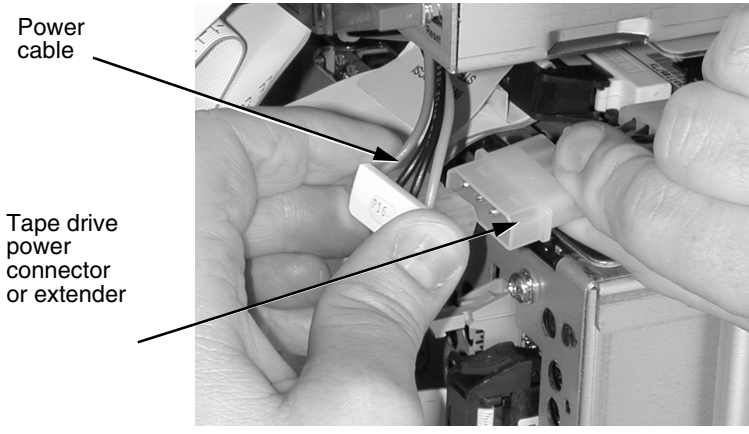
9. Use the Torx® #15 screws that you removed from the old tape drive module in step 3 on page 11-28, to secure the new tape drive module to the enclosure.

10. Inside the enclosure at the rear of the tape drive, attach the SCSI cable connector labeled "TAPE" to the SCSI connector or adapter at the back of the drive. ("TAPE" faces upward.) Push on the white tab to slowly and firmly push the connector. (See illustration below.) When fully secured, the two levers at the sides of the connector will pop outward.



CAUTION! ❑ Do *not* push on the levers to secure the SCSI connector. Push on the back of the connector on the SCSI cable instead. Care and firmness are required due to the large number of small pins.

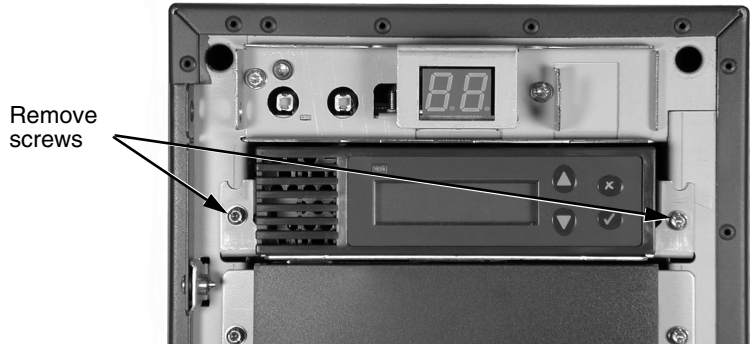
11. Inside the enclosure, find the unattached connector on the power cable. Attach it to the tape drive's power connector or to the power extender cable. See the illustration below. It is keyed to fit only one way.



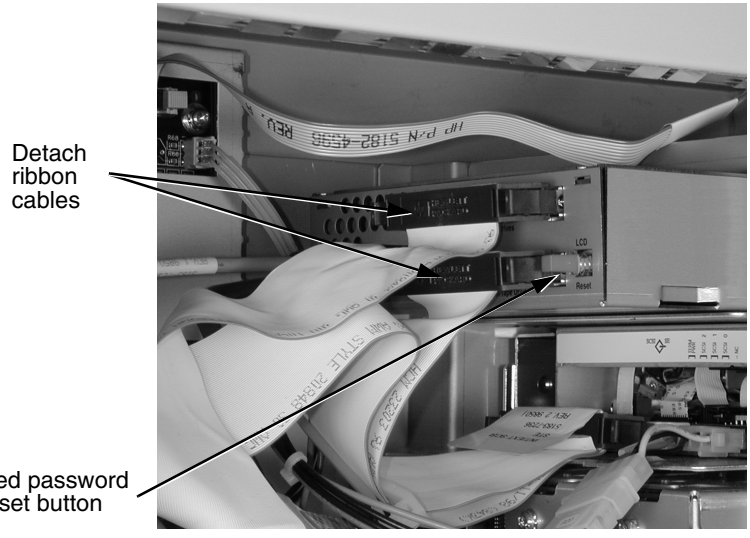
12. Check that the red button at the near end of the server module (above the tape drive module) is in its most fully "out" position.
13. Do the procedure "Close the Enclosure and Start Up" on page 11-27.

Replace the Server Module

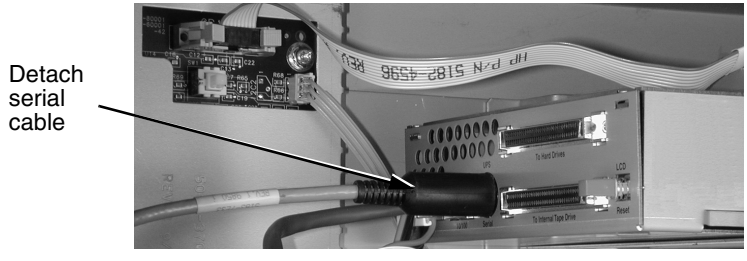
1. Assemble the following tools:
   - Torx® #15 driver or flat-blade screwdriver for filler panel
   - Flat-blade screwdriver for opening the enclosure
   - HD Server's enclosure key for opening the keylock
2. Do the procedure "Open the Enclosure" on page 11-25.
3. Detach the old server module at the front of the server (illustrated below), using the Torx® or screwdriver to remove the two screws. Reserve them for attaching the new server module.



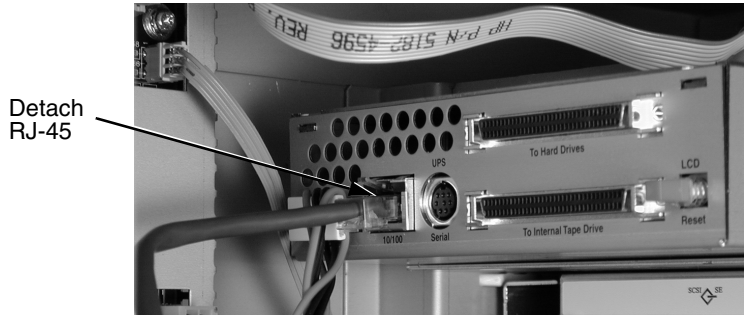
4. Inside the enclosure on the rear of the server, detach the two ribbon connectors nearest you, labeled “SERVER TOP” and “SERVER BOTTOM”. (See the illustration below.)



5. Detach the next connection behind the removed cables—the mini-DIN serial cable connector. (See the illustration below.).

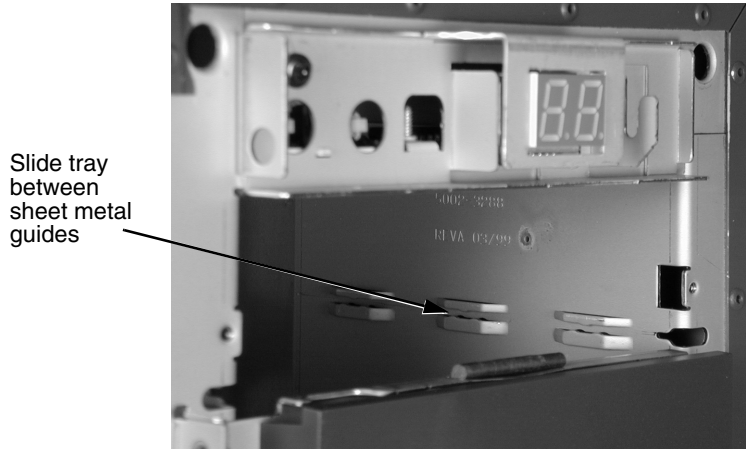


6. Detach the next connection behind the removed serial cable—the RJ-45 connector. (See the illustration below.).



7. Detach the next connection behind the removed RJ-45 connector—the power cable. (See the illustration below.) Now the server is fully detached.

8. Push the server module from the inside rear and receive it from the front of the enclosure with your other hand beneath the module. Support the module with your whole hand; do not pull on the front plastic panel.
9. Make sure that the new server is installed in its metal tray in the same way as the old one.
10. Insert the new server module into the server slot at the front of the server. The tray must fit between two sheet metal guides at both sides of the enclosure. If the tray does not slide easily, it may not be inside the guides. When the tray is fully inserted, its front holes align with the holes in the metal front of the enclosure.



11. Use the Torx® #15 screws that you removed from the old server module in step 3 on page 11-31, to secure the new server module to the enclosure.
12. Inside the enclosure, find the white plastic power connector. (It is the in-line connector on the power cable, not the connector at the end of the power cable for the tape drive.) See the illustration below. Attach that connector to the leftmost connector. labeled “Power”, on the rear of the server module. It is keyed to fit only one way.

Plug in power cable

13. Attach the RJ-45 cable into the next connector, labeled “10/100”. It is keyed to fit only one way.
14. Attach the serial cable into the next connector, labeled “Serial”. It is keyed to fit only one way.
15. Attach the SCSI ribbon cable connectors: “SERVER TOP” into the top connector labeled “To Hard Drives” on the server, and “SERVER BOTTOM” into the bottom connector labeled “To Internal Tape Drive” on the server.
16. Check that the red button at the near end of the server module is in its most fully “out” position.
17. Do steps 1 through 6 in the procedure “Close the Enclosure and Start Up” on page 11-27.
18. When you start up the server with a replacement server module, it will not have the same configuration that the old server module had in its Flash memory.

    A new module fresh from the factory will cause the server to initialize as if it is being installed for the first time (as described

on pages 2-8 through 2-9). To restore a configuration saved from the old server, go to the first item in the section “Lost or Failed Server Configuration” on page 11-14.

If you have replaced multiple disk drives as well as the server module, see also “Multiple Disaster Recovery: Server Configuration and File System” on page 11-20.

To Repair Enclosure Components

Call HP support per appendix A, “Getting Support” for fault isolation and repair.

Getting Support

HP Customer Care Centers Phone Numbers

North America		USA & Canada	970-635-1000
Latin America:			
Argentina	541-778-8380	Mexico	01 800-472-668446 01 800-HPContigo
Brazil	011-829-6612		
Chile	800-360999	Venezuela	800-47-888
Europe and Middle East and Africa:			
Austria	0 7114 201080	Norway	22 11 6299
Belgium (Dutch)	0 2 626 8806	Poland	0 22 865 9999
Belgium (French)	0 2 626 8807	Portugal	0 1 318 0065
Denmark	3929 4099	Russian Federation	095 916 98 21
Finland	0 203 47 288	South Africa	011 8061030
France	0 1 43 62 34 34	Spain	902 321 123
Germany	0 180 52 58 143	Sweden	0 8 619 2170
Hungary	36 (1) 252 4505	Switzerland	0 848 80 11 11
Ireland	0 1 662 5525	Turkey	90 1 224 59 25
Israel, Middle East	0 9 952 4848	United Kingdom	0 171 512 52 02
Italy	02 264 10350	Europe outside the UK (English)	+44 171 512 52 02
Netherlands	0 20 606 8751		
Asia and Pacific:			
Australia	3 8877 8000	Malaysia	0 3 295 2566
China	0 10 6564 5959	New Zealand	0 9 356 6640
Hong Kong	800 96 7729	Philippines	0 2 867 3551
India	0 11 682 6035	Singapore	0 272 5300
Indonesia	0 21 350 3408	Taiwan	0 2 717 0055
Japan	0 3 3335 8333	Thailand	0 2 661 4000
Korea	0 2 3270-0700, outside Seoul: 080 999 0700		
For all other countries, contact your reseller.			

Electronic Support Services

Hewlett-Packard provides support information and firmware upgrades for the HP SureStore HD Server on the World Wide Web and various bulletin board services.

World-Wide Web

HP's Electronic Support Center:

```
http://www.hp.com/support/hdserver
```

Bulletin Board Forums

America Online

1. Go to Keyword `hp` to reach the HP forum.
2. Select “HP Support Documents”.
3. Select “Networked Storage”.

CompuServe

1. To sign up for CompuServe, call (800) 848-8199 and ask for Representative #51 (USA only).
2. `go hp` to reach the HP forum.

Warranty

Obtaining Warranty Service

For your records, please retain your original proof of purchase. Record the product number and serial number. Your product number is on a label on the rear of the enclosure, for example, "J3291A". The serial number is on the same label.

Your Authorized Dealer

If you encounter difficulty, begin by contacting the HP Authorized Dealer who sold this product to you. Your HP Authorized Dealer will be familiar with your requirements and can provide assistance.

Service from HP Customer Care Centers

Hewlett-Packard's Customer Care Centers will assist you in case of difficulties with your HP SureStore HD Server. Use the telephone numbers in appendix A, "Getting Support", for all post-sales support, including problems and failures with the product. They will help you to troubleshoot and isolate the failed components, and they will provide warranty service.

Preparation

Go to chapter 11, "Resolving Problems with Your Server", and try to identify the failing component in your product—either the server module, an HP hard disk drive, an HP tape drive, or the rest of the enclosure. Also prepare the following information:

- HP product number
- Serial number
- Date of purchase
- Your shipping address

Then call an HP Customer Care Center as described above to arrange replacement of the defective component.

Service Billing (Out of Warranty)

When ordering a replacement component for out-of-warranty service, you may be charged a repair cost. See your HP Authorized Dealer or local HP Sales and Service Office representative.

Or, you can call HP at (800) 227-8164 (USA only). Prepare to supply shipping and billing addresses and one of the following:

- Credit card number with expiration date
- For customers having an established account with HP, a purchase order number.

Service Outside the USA

Customers outside the USA also should call the Customer Care Center telephone number for their country in appendix A, “Getting Support”. Once out of the warranty period, they may contact their HP Authorized Dealer or HP Sales and Service Office to obtain information on prices, exchange component availability, and instructions.

Your Hewlett-Packard Limited Warranty

One Year On-Site Warranty

1. HP warrants to you, the end-user customer, that HP hardware, accessories, and supplies will be free from defects in materials and workmanship for a period of ONE (1) YEAR. If HP receives notice of such defects during the warranty period, HP will, at its option, either repair or replace product components that prove to be defective. Replacement components may be either new or equivalent in performance to new.
   a. Repair or replacement will be performed by HP or the Reseller, at its option, at your premises or “on site”, by the Return-to-HP/Reseller process or by use of the Customer Replacement Part process.
   b. Replacement components assume the remaining warranty of the components they replace. When service involves the exchange of a product or a component, all removed components, in their entirety, become the property of HP and must be returned to HP after the replacement has been installed. The replacement component becomes your property.
   c. You are responsible for restoring any configuration or data.
2. HP does not warrant that the operation of HP products will be uninterrupted or error free. If HP is unable, within a reasonable time, to repair or replace the product to a condition as warranted, you will be entitled to a refund of the purchase price upon prompt return of the product.
3. HP products may contain remanufactured parts equivalent to new in performance or may have been subject to incidental use.
4. Warranty does not apply to defects resulting from (a) improper or inadequate maintenance or calibration, (b) software, interfacing, parts, or supplies not supplied by HP, (c) unauthorized modification or misuse, (d) operation outside of the published environmental specifications for the product, or (e) improper site preparation or maintenance.

5. TO THE EXTENT ALLOWED BY LOCAL LAW, THE ABOVE WARRANTIES ARE EXCLUSIVE AND NO OTHER WARRANTY OR CONDITION, WHETHER WRITTEN OR ORAL, IS EXPRESSED OR IMPLIED AND HP SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTIES OR CONDITIONS MERCHANTABILITY, SATISFACTORY QUALITY, AND FITNESS FOR A PARTICULAR PURPOSE. Some countries, states, or provinces do not allow limitations on the duration of an implied warranty, so the above limitation or exclusion might not apply to you. This warranty gives you specific legal rights and you might also have other rights that vary from country to country, state to state, or province to province.
6. HP will be liable for damage to tangible property per incident up to the greater of $300,000 or the actual amount paid for the product that is the subject of the claim, and for damages for bodily injury or death, to the extent that all such damages are determined by a court of competent jurisdiction to have been directly caused by a defective HP product.
7. TO THE EXTENT ALLOWED BY LOCAL LAW, THE REMEDIES IN THIS WARRANTY STATEMENT ARE YOUR SOLE AND EXCLUSIVE REMEDIES. EXCEPT AS INDICATED ABOVE, IN NO EVENT WILL HP OR ITS SUPPLIERS BE LIABLE FOR LOSS OF DATA OR FOR DIRECT, SPECIAL, INCIDENTAL, CONSEQUENTIAL (INCLUDING LOST PROFIT OR DATE) , OR OTHER DAMAGE, WHETHER BASED IN CONTRACT, TORT, OR OTHERWISE. Some countries, states, or provinces do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

   THE WARRANTY TERMS CONTAINED IN THIS STATEMENT, EXCEPT TO THE EXTENT LAWFULLY PERMITTED, DO NOT EXCLUDE, RESTRICT, OR MODIFY, AND ARE IN ADDITION TO THE MANDATORY STATUTORY RIGHTS APPLICABLE TO THE SALE OF THIS PRODUCT TO YOU.

For Specific Regions

For Australia and New Zealand

For consumer transactions in Australia and New Zealand:
The warranty terms contained herein—except to the extent lawfully permitted—do not exclude, restrict, or modify, and are in addition to, the mandatory statutory rights applicable to the sale of this product to you.

Póliza de Garantía (México)

Hewlett-Packard de México, S. A. de C. V. con domicilio en:
Prolongación Reforma No. 470
Col. Lomas de Sta. Fe, 01210
Delegación Alvaro Obregón
Tel. 326 46 00

Garantiza este producto por el término de doce meses en todas sus partes y mano de obra contra cualquier defecto de fabricación y funcionamiento a partir de la fecha de entrega al consumidor final. En el caso de productos que requieran de enseñanza o adiestramiento en su manejo o en su instalación, a partir de la fecha en que hubiese quedado operando normalmente el producto después de su instalación en el domicilio que señale el consumidor.

CONDICIONES :

1. Centros de Servicio, Refacciones y Partes:

Para hacer efectiva esta garantía, no podrán exigirse mayores requisitos que la presentación de esta póliza junto con el producto en el lugar donde fue adquirido o en el centro de servicio ubicado en el domicilio de la parte superior de esta hoja, mismo en el que se pueden adquirir refacciones y partes.

2. Cobertura:

La Empresa se compromete a reparar o cambiar el producto, así como las piezas y componentes defectuosos del mismo, sin ningún cargo para el consumidor. Los gastos de transportación que se deriven de su cumplimiento serán cubiertos por Hewlett-Packard de México, S. A. de C. V.

<table>
<tr><td colspan="2">Producto</td><td colspan="2">Marca</td><td>Modelo</td></tr>
<tr><td colspan="2">No. de Serie</td><td colspan="3">Nombre del Distribuidor</td></tr>
<tr><td colspan="5">Dirección : (Calle, Número, Colonia o Poblado, Delegación o Municipio)</td></tr>
<tr><td>C.P.</td><td>Ciudad.</td><td>Estado</td><td colspan="2">Teléfono</td></tr>
<tr><td colspan="5">Fecha de entrega o instalación</td></tr>
</table>

3. Tiempo de Reparación:

El tiempo de reparación en ningún caso será mayor a treinta días contados a partir de la recepción del producto en cualquiera de los sitios en donde pueda hacerse efectiva la garantía.

4. Limitaciones:

Esta garantía no es válida en los siguientes casos:

1. Cuando el producto ha sido utilizado en condiciones distintas a las normales.
2. Cuando el producto no ha sido operado de acuerdo con el instructivo de uso en idioma Español proporcionado.
3. Cuando el producto ha sido alterado o reparado por personas no autorizadas por Hewlett-Packard de México, S.A. de C. V.

Notas:

El consumidor podrá solicitar que se haga efectiva la garantía ante la propia casa comercial donde adquirió el producto siempre y cuando el fabricante o importador no cuente con talleres de servicio.

En caso de que la presente garantía se extraviara, el consumidor puede recurrir a su proveedor para que se le expida otra póliza de garantía, previa presentación de la nota de compra o factura respectiva.

Certificado de Garantia (Argentina)

Hewlett-Packard Argentina, S. A.
Montañeses 2150
1428 Buenos Aires
Argentina
Tel. 787 7100

Producto:	
Modelo:	
No. de serie:	
Fecha de entrega:	
Vigencia de la garantía:	
Extensión de la garantía:	

A. Cobertura de la garantía:

1. Hewlett-Packard Argentina, S.A. (HPA) garantiza al cliente (usuario final) que el producto al que se refiere esta garantía estará libre de defectos de fabricación y de mano de obra por el término antes indicado contando desde la fecha de compra del producto por parte del usuario final original a un distribuidor o comercializador debidamente autorizado por HPA.
2. La presente garantía cubre únicamente aquellos defectos que surgiesen como resultado del uso normal del producto y no por aquellos que resultasen de:
   a. Mantenimiento inapropiado o inadecuado, alteración o reparación realizados por personal no autorizado por HPA;
   b. Uso de software, accesorios, soportes, suministros, consumibles o interfaz no suministrados por HPA;
   c. Modificaciones no autorizadas o uso indebido;
   d. Operación fuera de las especificaciones ambientales para el producto, incluyendo abuso del ciclo de trabajo o uso de cargas de conmutadores sin protección contra sobretensiones;
   e. Uso de medios de impresión o tarjetas de memoria no soportados;
   f. Lugar de uso o mantenimiento inapropiados;
   g. Daños durante el traslado; o
   h. Cualquier violación de las condiciones de uso, instalación y mantenimiento necesarias especificadas en el Manual de Operaciones.
3. Si el cliente (usuario final), durante el periodo de garantía, pusiera en conocimiento de HPA la existencia de los defectos definidos anteriormente, HPA podrá, según prefiera, reparar o reemplazar el producto si está averiado. Cualquier producto de reemplazo será nuevo o como nuevo. En caso que al momento del reemplazo no hubiese disponible un producto idéntico al reemplazado (ya sea por discontinuación de su producción, falta de stock o por cualquier otra causa), HPA se reserva el derecho de suministrar un producto de prestaciones o funcionalidad por lo menos iguales a las del producto reemplazado. Si luego de un plazo razonable, no fuese posible para HPA reparar o reemplazar el producto, el cliente tendrá derecho, como única compensación, al reintegro del precio de compra, contra la devolución del producto a HPA.

B. Limitación de la garantía:

1. NI HPA, NI NINGUNA ENTIDAD O PERSONA DIRECTA O INDIRECTAMENTE VINCULADA O RELACIONADA CON HPA:
   A) OFRECEN NINGUNA OTRA GARANTIA DE NINGUNA INDOLE, EXPRESA O IMPLICITA, ORAL O ESCRITA, RESPECTO AL PRODUCTO AL QUE SE REFIERE ESTA GARANTIA; O
   B) FORMULAN NINGUNA GARANTIA IMPLICITA DE COMERCIALIZACIÓN O ADECUACIÓN DEL PRODUCTO PARA UN PROPOSITO DETERMINADO.

   HPA NO OFRECE NINGUNA GARANTÍA DE QUE LA OPERACIÓN DE SUS PRODUCTOS SERÁ ININTERRUMPIDA O LIBRE DE ERRORES.

C. Exoneración de responsabilidad:

EXCEPTUANDO LAS OBLIGACIONES EXPUESTAS EN ESTE CERTIFICADO DE GARANTIA, BAJO NINGUNA CIRCUNSTANCIA HPA SERÁ RESPONSABLE DE CUALQUIER DAÑO DIRECTO O INDIRECTO (INCLUYENDO SIN LIMITACIÓN, PERDIDA DE DATOS O LUCRO CESANTE) O POR CUALQUIER DAÑO O PERJUICIO QUE SEA CONSECUENCIA DIRECTA, INDIRECTA O REMOTA DEL USO O MAL FUNCIONAMIENTO DEL PRODUCTO, CUALQUIERA QUE SEA EL FUNDAMENTO DEL RECLAMO (CONTRACTUAL, EXTRACONTRACTUAL O LEGAL).

LOS REMEDIOS DESCRITOS EN ESTA GARANTIA SON LOS UNICOS Y EXCLUSIVOS.

D. Condiciones particulares:

E. Reparaciones:

Comuníquese con el distribuidor o comercializador debidamente autorizado por HPA que le vendió este producto, o para servicio mas rápido, llame al Centro de Asistencia Técnica, al numero 787-8080.

Las reparaciones se llevarán a cabo en los centros autorizados de servicio en Argentina, contra la presentación del producto, este Certificado de Garantía y la factura original de compra del producto, en el caso de impresoras presentar la HP Card.

Specifications

Physical Specifications

Dimensions	Height: 42.5 cm (16.7 in) Width: 21.7 cm (8.5 in) Depth: 44.4 cm (17.5 in)
Weight	J3290A: 24.0 kg (53 lb) J3291A: 25.5 kg (56 lb) J3292A: 25.5 kg (56 lb)
Cooling	One main fan and one fan per power supply

Interface Connectors

Network	RJ-45: 10Base-T and 100Base-TX, with twisted-pair cabling
External SCSI	68-pin high-density SCSI-2

Electrical and Environmental

Power

Redundant power supplies

Must be correctly configured before power attached, or damage may result	**At Switch-Selectable Input Voltage**	
	100–127 Vac	200–240 Vac
Current	5.0 A	2.85 A
Frequency	50/60 Hz	
Consumption	376 W maximum 439 W peak	363 W maximum 421 W peak
Availability	194 W continuous 230 W peak	

Environmental

Operating Temperature	41–95°F (5-35°C)
Operating Humidity	20–80%, non-condensing
Acoustic Emissions	L NPE 5.5 B, maximum Geraeuschemission LwA=54 dB am fiktiven Arbeitsplatz nack DIN 45635 T.19

Electromagnetic

Complies with:

CISPR 22 Class B
FCC Part 15, Class B
EN 55022 Class-B
EN 55024
VCCI Class 2
Canadian EMC Class B requirements
Australian EMC Class B requirements
For more information, see appendix D.

Safety

Complies with:

EN-60950 +A1, +A2, +A3, +A4, AII / IEC 950 +A1, +A2, +A3, +A4
EN 60825-1 / IEC 825-1 Class 1
UL 1950, 3rd edition
NOM-019-SCFI-1994
CSA 22.2 No.950

HP 9.1-GB SCSI-2 Disk Drive Module

Capacity		9.1 GByte
Rotational Speed		7200 rpm
Latency	Average	4.17 microsecond
Data Transfer Rate	Maximum	40 MByte/s
Seek Time	Average	Read 7 ms Write 8 ms
Power Consumption	Average	13.4 W
Current	Average	1.0 A @ 5 V 0.7 A @ 12 V

HP SureStore DAT40i DDS-4 Tape Drive

Capacity	Assuming 2:1 compression, DDS-4 155m cartridge	40 GByte
Data Transfer Rate	DDS-4 cartridge	6 MByte/s – synch 40 MByte/s – asynch
Cartridge Load Time	Average	< 15 s
Fast Search	Average file access time, DDS-4 cartridge	50 s
Power Consumption	Average	7.6 W
Current	Average draw, typical operation	0.5 A @ 5 V 0.5 A @ 12 V

Tape Media: DDS-4 Data Cartridge

Long-Term Storage	**Temperature**	41–90°F (5-32°C)
	Humidity	20% RH to 60% RH

Regulatory and Safety Information

Regulatory Statements

FCC Statements

General Information. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Pursuant to Part 15.21 of the FCC Rules, any changes or modifications to this equipment not expressly approved by the Hewlett-Packard Company may cause interference and void the FCC authorization to operate this equipment.

The Federal Communications Commission has prepared a booklet titled Interference Handbook (1986), which may be helpful to you. This booklet (stock number 004-000-004505-7) may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

FCC Class B. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Note Meeting FCC Class B specifications requires shielded cables.

Australia This equipment complies with Australian EMC requirements.

Canada This equipment complies with Canadian EMC Class-B requirements.

Japan:
VCCI Class B

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＢ情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると受信障害を引き起こすことがあります。
取り扱い説明書に従って正しい取り扱いをして下さい。

Taiwan:
Class A

警告使用者：這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

European Union

Declaration of Conformity. The following Declaration of Conformity complies with ISO/IEC Guide 22 and EN 45014. It identifies the product, the manufacturer's name and address, and the applicable specifications that are recognized in the European community.

DECLARATION OF CONFORMITY

according to ISO/IEC Guide 22 and EN45014

Manufacturer's Name: Hewlett-Packard Company

Manufacturer's Address: 8000 Foothills Blvd.
Roseville, CA 95747-5677
U.S.A.

declares that the product:

Product Name: HP SureStore HD Server Family

Model Number: J3290A, J3291A, J3292A

conforms to the following Product Specifications:

Safety: EN60950 (1992) +A1,A2,A3,A4,AII / IEC 950 (1991) +A1,A2,A3,A4
EN60825-1 (1994) / IEC 825-1 (1993), Class 1
GB 4943 (1995)

EMC: EN 55022 (1994) +A1,A2 / CISPR-22 (1993) +A1,A2 Class B
GB 9254 (1988)
EN 55024 (1998)
IEC 61000-4-2 (1995); EN 61000-4-2 (1995)
IEC 61000-4-3 (1995); EN 61000-4-3 (1996)
IEC 61000-4-4 (1995); EN 61000-4-4 (1995)
IEC 61000-4-5 (1995); EN 61000-4-5 (1995)
IEC 61000-4-6 (1996); EN 61000-4-6 (1996)
IEC 61000-4-8 (1993); EN 61000-4-8 (1993)
IEC 61000-4-11 (1994); EN 61000-4-11 (1994)

Supplementary Information:

The product herewith complies with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC and carries the CE marking accordingly. Shielded cables are recommended to meet the above specifications.

Tested with Hewlett-Packard Co. products only.

Roseville, May 12, 1999

Grant Marten, Product Regulations Manager

European Contact: Your local Hewlett-Packard Sales and Service Office or Hewlett-Packard GmbH, Department TRE, Herrenberger Strasse 130, D-71034 Böblingen (FAX:+49-7031-14-3143).

Safety Statements

Follow the basic “Safety Considerations” described on the page following the title page in this *User’s Guide*.

Chinese Safety Statement

HP网络产品使用安全手册

使用须知

欢迎使用惠普网络产品，为了您及仪器的安全，请您务必注意如下事项:

1. 仪器要和地线相接，要使用有正确接地插头的电源线，使用中国国家规定 的220V 电源。
2. 避免高温和尘土多的地方，否则易引起仪器内部部件的损坏。
3. 避免接近高温，避免接近直接热源，如直射太阳光、暖气等其它发热体。
4. 不要有异物或液体落入机内，以免部件短路。
5. 不要将磁体放置于仪器附近。

警告

为防止火灾或触电事故，请不要将该机放置于淋雨或潮湿处。

安 装

安装辅助管理模块，请参看安装指南。

保修及技术支持

如果您按照以上步骤操作时遇到了困难，或想了解其它产品性能，请按以下 方式与我们联络。

如是硬件故障:

1. 与 售 出 单 位 或 当 地 维 修 机 构 联 系。
2. 中 国 惠 普 有 限 公 司 维 修 中 心 地 址:
   北 京 市 海 淀 区 知 春 路 49号 希格玛大厦
   联 系 电 话: 010-62623888 转 6101
   邮 政 编 码: 100080

如是软件问题:

1. 惠 普 用 户 响 应 中 心 热 线 电 话: 010-65645959
2. 传 真 自 动 回 复 系 统: 010-65645735

WARNING!

Lifting Precautions

- ❏ HP SureStore HD Server 4000 may weigh in excess of 20 kilograms or in excess of 40 pounds (see "Weight" on page C-1 in appendix C). Two people are required to lift the tower.

Mounting Precautions

When you put the server into a rack or cabinet, follow these mounting precautions:

- ❏ Use only the HP J1492B Rackmount Kit for mounting hardware.
- ❏ The rack or cabinet should be adequately secured to prevent it from becoming unstable and/or falling over. The server should be mounted in a position toward the bottom of the rack for stability.
- ❏ Ensure that the server does not overload the power circuits, wiring, and over-current protection. To determine the possibility of overloading the supply circuits, add together the amperage ratings from the labels of all equipment installed on the same circuits and compare the total with the rating limits for the supply circuits.
- ❏ Make sure that the power source circuits are properly grounded, then use the supplied power cords to connect the server to the circuit. See the "Safety Considerations" statements on the page following the title page in this guide.

  If your installation requires a different power cord than the one supplied with the server, be sure to use a power cord displaying the mark of the safety agency that defines the regulations for power cords in your country. The mark is your assurance that the power cord can be used safely with the server.
- ❏ Do not install the server in an environment where the operating ambient temperature might exceed 40°C (104°F).
- ❏ Do not block airflow around the back of the unit.

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